Smithsonian Institute Washington D C

THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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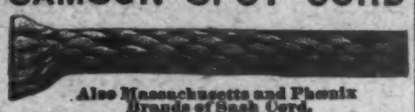

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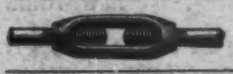

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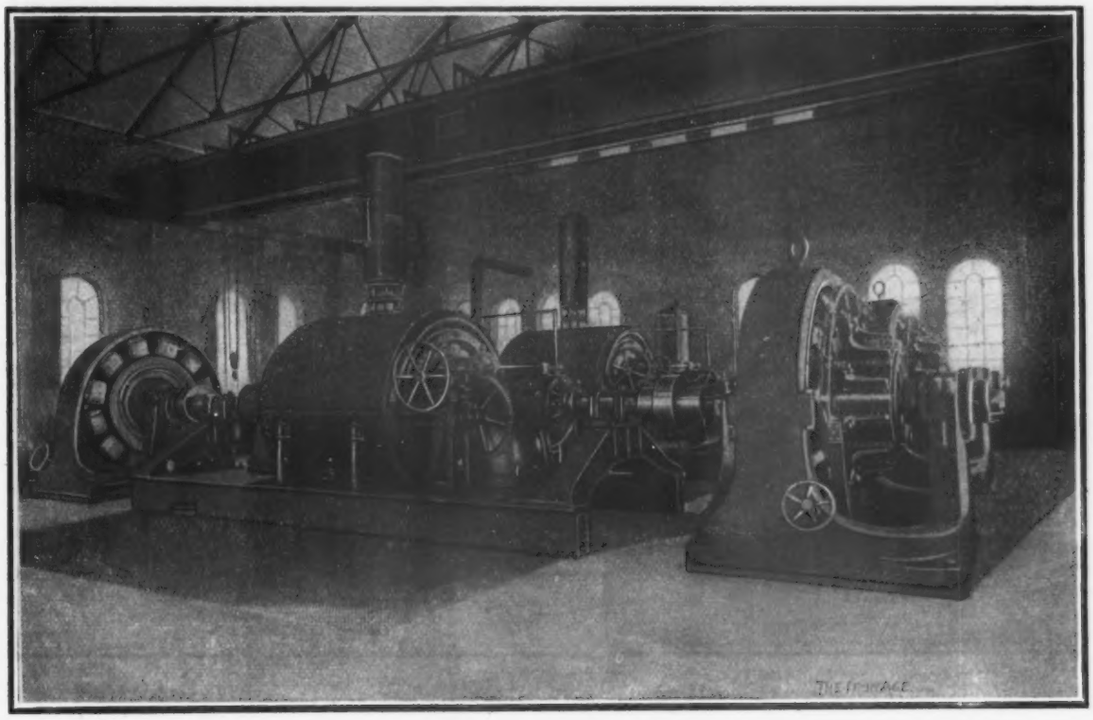
THE IRON AGE

THURSDAY, MAY 15, 1902.

The Turbine Installation of Royal Aluminum Company's Plant, Shawinigan Falls, Quebec.

In conjunction with the water power development of the Shawinigan Water & Power Company, at Shawinigan Falls, Quebec, are the works of the Royal Aluminum Company, who have leased their water from the Shawinigan Water & Power Company to furnish them sufficient power for their plant.

The power house is situated at the base of the hill, near that of the Shawinigan Water & Power Company, giving an effective head ranging from 125 to 130 feet, the larger power house being that of the Shawinigan Water & Power Company and the smaller that of the Royal Aluminum Company. The water is carried from the bulkhead at the top of the hill to the power house below through a penstock 9 feet diameter, passes under the floor of the power house and has outlets 6 feet 6 inches diameter opening upward, in which is placed a hydraulic valve, to which is connected the inlet of the turbine flumes. Provision has also been made for running another 9-foot penstock alongside of and parallel with the present one when it becomes necessary to increase the size of the plant, which will eventually contain five units of 3200 horse-power each, or a total of 16,000 horse-power.



TURBINES AND GENERATORS.

The installation at present consists of two sets or units of two turbines each in a steel flume. The wheels are 1600 horse-power each, or 3200 horse-power to the unit, and are mounted on a horizontal shaft 10 inches diameter and 30 feet long. The water enters the flume from the penstock below through a 6-foot 6-inch plate steel connection and passes through the wheels, discharging through cast iron quarter-turns and steel draft tubes 4 feet diameter and 16 feet 3 inches long into the tail race below the penstock.

At each end of the turbine shaft is direct connected a 936-kw. Westinghouse direct current generator, as shown in Fig. 1, which is an interior view of the power house. The coupling which connects the wheel shaft with the generator shaft has a plate between its faces, so that either generator can be disconnected by removing two bolts and withdrawing the plate, thus leaving a 1-inch space between the coupling faces, allowing one generator to be out of service, while the generator on the opposite end can be utilized. In order to relieve the bolts of any pressure the plate has a tongue on each side which fits a corresponding groove in the faces of the coupling, thus transmitting all the power through the plate.

The wheel or runner, so-called, is of the American type, and is 59½ inches outside diameter, and runs 250 revolutions per minute under 125 feet head. The wheel is made up of two parts—viz., the outside rim, which contains the buckets and is made of bronze, and the center or hub, which is made of cast iron. The rim is fastened to the hub by 30 1-inch bolts, and is so arranged that when it becomes necessary to place a new wheel the rim is removed and a new one put in its stead without dismantling the unit, as the shaft or hub does not have to be removed from the flume, thus reducing the time of placing a new runner to a minimum.

According to contract these wheels were to be tested at the flume of the Holyoke Water Power Company, at Holyoke, Mass., and were required to develop an average efficiency of 30 per cent. from three-fourths to full gate. Below is given a digest of the test made at Holyoke, which shows an average efficiency of 82.73 per cent. between seven-tenths and full gate, which was above the guarantee, and the efficiency of 85.38 per cent. at full gate is phenomenal for a high head wheel.

Gate opening.	Head acting on wheel. Feet.	Revolutions per minute.	Efficiency. Per cent.
1.000	17.71	88.87	85.38
0.848	17.10	87.00	83.18
0.704	17.12	92.00	79.63

The gates are of the cylinder, or ring, pattern of the draw rod type. This gate mechanism differs, however, from

any other draw rod gate devices in the location of its bearing or sliding points and the position of the draw rods. The line of action of the draw rods is in the same plane that the bearing or sliding surfaces lie, thus relieving the gate of any tipping or binding tendencies. The gate slides on two ways, which lie in a horizontal plane, while the center of the wheel shaft and the gate rods are also in this plane.

The ways are similar to those of the guides and cross head of a steam engine, having bronze gibs which are adjustable by means of set screws in order that the wear can be taken up when necessary. If the wear cannot be taken up in a cylinder gate when placed in a horizontal position the gate will finally drag on the bottom chutes and will tip over and bind in the case, making the gate move with difficulty. This is a point that has been overlooked by water wheel builders generally, except in this particular installation, and is of a meritorious character. In order that the draw rods can be placed in the same plane the rods for the nearer gate are made hollow and the rods for the far gate pass through them. These draw rods are fastened to cast iron cross heads, to which are attached the gate stems for moving the gates. Adjustments are made by means of nuts on the draw rods and gate stems. The gears for operating the gate mechanism are on the outside of the flume out of the water and are supported by brackets. By placing the gearing on the outside its exact condition can be seen at any time without entering the flume. The wheel cases are joined together in the center by a wood lined bearing, which makes a center tie for the flume.

The flume is 9 feet diameter, and is made of $\frac{5}{8}$-inch steel, 60,000 pounds tensile strength, and all seams are double riveted. It has cast iron heads $1\frac{1}{2}$ inches thick, and stayed with ten $1\frac{3}{4}$-inch stay rods. The wheel cases are bolted direct to the flume heads, and the whole mounted on I-beam foundations, made up of four 24-inch 100-pound I-beams. The shaft is of hammered iron, and is supported in two ring oiling journal boxes of the fixed ring type, in which the oil ring is clamped on the shaft and does not depend on the friction of the ring on the shaft for lubrication. By this method the lubrication is perfect, and the attendant always knows that the bearing is lubricated so long as the shaft is running, and he is never troubled by climbing up on the machine to see if his rings are turning. The journal boxes are placed on heavy cast iron bridge trees, and are adjustable in all planes by means of set screws. In the necks of the quarter turns are placed lignumvitae thrust bearings, which are made adjustable by six $1\frac{1}{4}$-inch bronze set screws, shown in Fig. 4, so as the bearings wear the lost motion is taken up by the screws.

The most salient features of these wheels, besides their high efficiency when compared with other high head wheels, is their freedom from noise and vibrations, they running exceptionally steady and quiet.

The power house and penstocks were designed by and under the supervision of W. C. Johnson, the well-known hydraulic engineer. The turbines were designed and built by the Dayton Globe Iron Works Company, Dayton, Ohio, who make a specialty of designing and building turbines for high heads.

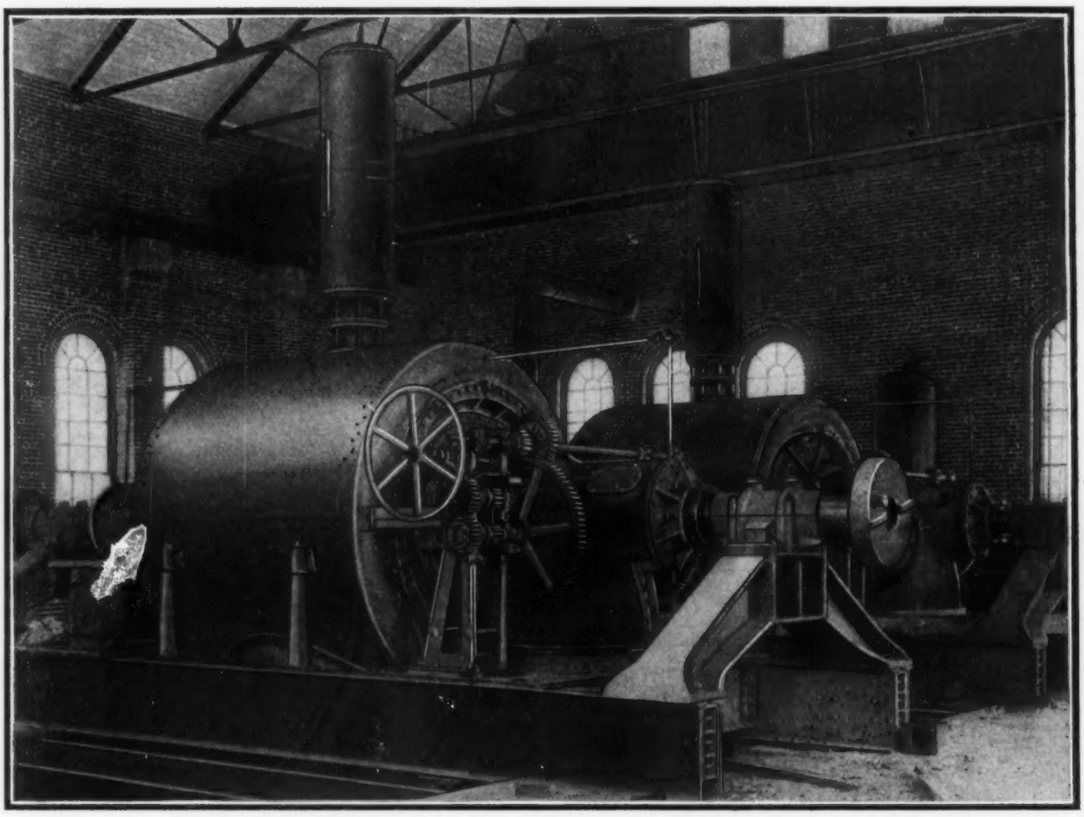


Fig. 2.—Turbines without Generators.

The Calorific Heater & Mfg. Company.

A strip of land on the Lehigh Valley Railroad, at Allentown, Pa., has been purchased by the Calorific Heater & Mfg. Company, who have taken out articles of incorporation for the purpose of manufacturing Calorific steam and hot water heaters, radiators and heating appliances. On this property the company intend to erect a two-story brick building, 50 x 141 feet; a foundry building, 100 x 114 feet, and a one-story frame storage pattern building, 20 x 30 feet, which will be covered with sheet iron. The plant will be equipped with core ovens, six traveling cranes, elevator and scales and a cupola, also drill presses, lathes and other machines for fitting up and finishing boilers and radiators. It is said that the plant will be fully equipped with the best and most modern machinery for turning out the Calorific heaters expeditiously and economically. These heaters, which have been on the market for several years, have not only demonstrated their excellence, but have also secured a wide popularity, so that the company are now enjoying an increased demand for them.

Scotland and the Shipping Combine.

Far from Constituting a Monopoly.

GLASGOW, May 2, 1902.—There has been nothing like the excitement here that the London newspapers have exhibited over the shipping combine. A great deal of nonsense, of course, has appeared in some of the newspapers, obviously written by persons who know nothing whatever about shipping. There is more knowledge of the transatlantic trade in Glasgow than anywhere else except Liverpool, and here it is well understood that not even the beginning of a monopoly has been effected. No one who knows anything of the extent of the Atlantic trade and the number of vessels engaged in it could fall into the mistake of supposing that even the absorption of the White Star Line by the Morgan syndicate would give the latter the command of that trade —much less of the "merchant marine world," as somebody is reported to have said. Here we have the headquarters of the Cunard, the Allan, the Anchor, and the Donaldson lines, which in combination would be quite as powerful as the Morgan combination. But there is plenty of room for all, without the undercutting which has been rather too prevalent on the Atlantic for some years past, and for which, perhaps, the foreign lines are largely to blame. What amazes us here is why a pool could not have been made between the White Star and the American lines, and a sailing and rates agreement between the pool and the German lines, without so much bounce and fuss. The world has been repeatedly informed by London newspapers that the Glasgow owned lines had all been acquired by the syndicate, though, strange to say, not one of the Glasgow lines was aware of it, or had been even consulted about it. In the same way the Clyde shipyards and the Scotch coal fields are periodically being bought up by the Morgan syndicate, whose purse must be as deep as the Zuyder Zee if it is capable of cashing up on all the enterprises attributed to it by the gossip mongers. It does not occur to the gossips to consider why Americans should want to buy shipyards here in which to build vessels which they cannot put on the American registry. If they simply want to buy ships to run under the British flag, they can buy them a good deal cheaper than they could build them.

New Shipbuilding Contracts Falling Off.

Our shipbuilders do not disturb themselves much either over the Morgan shipping combine or the reports of their own pending doom by absorption. They go on pegging away at the work on hand and always looking out for more. Unfortunately they are not obtaining as much more as they are finishing off. Apart from the Admiralty contracts, which, however, were a big haul in themselves, the Scotch shipbuilders did not last month book more than about 10,000 tons of new contracts. And the new vessels were all special steam craft for particular purposes, including one sailing vessel of 3500 tons. It is curious how often when the demand for cargo steamers dries up, orders for sailing vessels begin to drop in, almost unnoticed. It is no wonder there is no demand for cargo steamers just now, considering the dead loss rates prevailing in the freight market and the number of vessels that are being laid up. The demand will revive again some day, of course, but if it were not for the Admiralty contracts the outlook for the shipbuilding industry of the Clyde would be dark in the extreme. As it is, it is far from gay. The launches in April were 28 vessels of 46,660 tons, compared with 23 vessels of 31,240 tons in April of last year. The total for the four months is 152 bottoms, and this is the largest output in the first four months of any year except 1899, when the total was 158,825 tons. At the beginning of the second quarter of the year it was estimated that Scotch shipbuilders had merchant vessels under construction to the extent of 442,770 tons, the Tyne 224,000 tons, the Wear 158,640 tons, Belfast 177,000 tons, the Tees district 155,000 tons. These figures do not include war ships.

Shipments of Pig Iron to the United States.

A fortnight ago the steamer "Linwood" was chartered to take 2300 tons foundry pig iron at a freight rate of 6 shillings 6 pence, from Middlesbrough to Philadelphia, U. S., this being the balance of a 10,000-ton lot bought some time ago. Since then another boat has been chartered to take 3500 tons basic iron also to Philadelphia, and charters are being negotiated for further parcels of Cleveland ordinary iron, which is now a good deal dearer than when America first began to buy, and the rise seems to have checked the German as well as the American demand. There are parcels of a few hundred tons going across by the liners from here every week, and a cargo of hematite iron has been sold for shipment at Barrow to the United States. The price of this sale is not disclosed, but Cumberland hematite warrants are to-day worth 60 shillings. Middlesbrough hematite is selling at 57 shillings, and Scotch at 62 shillings. Some Cumberland hematite has been brought round to the Clyde for shipment by the liners to your side. Our shipments of pig iron keep up well, considering the depression everywhere save in America. In April the total sent from Middlesbrough was 101,000 tons as compared with 119,500 tons in April, 1901, and from Glasgow, &c., 96,000 tons, as compared with 89,000 tons in the corresponding month.

Imports of Pig Iron.

On the other hand, our imports have been considerable, shipments from Nova Scotia to the Clyde having been resumed. Two cargoes have recently arrived per "Trold" and per "Priestfield," amounting in the aggregate to about 10,200 tons. This and another cargo still to come in are believed to be the balance of a contract made last year. I do not hear of any fresh sales on account of Nova Scotia. Some of this iron was discharged at a lower port for the steel works, but the bulk of it has come to Glasgow, and is being delivered to pipe founders. Then a week or two ago a steamer arrived with about 4000 tons foundry iron from Kertch, South Russia, and the steamer "Dart" has just been chartered to bring another cargo here from the same port. In this last case the freight is 10 shillings per ton, and as the iron has been sold at about 48 shillings, ex ship, there must be a good loss on the cost of production in Russia. It would be interesting to know what price has been realized for the Russian iron sent to America, and how the quality is turning out. The home consumption of crude iron is good, that of steel making iron better than it has been. The makers' prices are steadily maintained, regardless of the fluctuations in warrants, which, however, are not very great. The output is not being increased, and, as it is barely equal to the home and export demand combined, warrant stocks are being drawn on. At the end of April there were in the Glasgow warrant stores only 53,081 tons, with warrants in circulation for 51,000 tons, and in the Middlesbrough stores 140,678 tons, with warrants in circulation for 122,650 tons.

The Coal Trade.

Our coal trade has been very quiet for some time back, but although the home consumption is not so large as last year, the shipments are larger. Up to the end of April the total was 290,000 tons more than in the corresponding portion of 1901. But new export orders are not coming in with any freedom and a dull shipping season is expected. Some of the collieries are even now not able to keep at full work, and this seems to be the case also in the North of England. Prices, therefore, are easier all around, and, except in South Wales, where the best qualities seem to be rather scarce, on the down grade. This is to the advantage of iron and steel makers, who complain that fuel is still too dear in relation to the prices of their products. This month a reduction is being made of 6 pence per ton in splint coal for the blast furnaces, making the price 7 shillings 6 pence per ton at the pit. This reduction is from 1 shilling to 1 shilling 6 pence per ton of pig iron produced. But it is not likely that smelters will give consumers the benefit of the reduction so long as the present demand on them continues. B. T.

The strike of the bridge and structural iron workers in the Pittsburgh district has been declared off, the men having come to a settlement with the American Bridge

Company by which they are to receive 47½ cents per hour and an eight-hour day. The men demanded 50 cents an hour and an eight-hour day, which was refused by the American Bridge Company, and after a number of conferences a settlement was reached as given above. On Monday and Tuesday of this week practically all of the men, who have been idle since May 1, returned to work.

The Anti-Injunction Bill Troubling Its Sponsors.

Mr. Littlefield Criticises the House Bill.

WASHINGTON, D. C., May 13, 1902.—The representatives here of organized labor are making a strenuous effort to induce the Senate to take up and pass the so-called Hoar-Grosvenor Anti-Conspiracy and Anti-Injunction bill, which was passed by the House on the 2d inst. in place of the measure as reported by Senator Hoar on March 17. The bill in its original form was identical in both House and Senate, and has been passed by the House as originally introduced by Representative Grosvenor. The friends of the measure in the House were so enthusiastic with regard to it that an effort was made to render it even more liberal in the exemptions provided by it from punishment for conspiracies entered into, and Representative Littlefield of Maine went so far as to draft a minority report, in the course of which he said:

"The proposition which seems to give the committee the greatest satisfaction is its discovery as to what it calls 'the effect of the bill.' It seems that it has ascertained that all this bill purports to do is to make 'non-enjoinable, and, in some cases, unpunishable,' 'the agreement, combination or contract described,' only 'not an act done or threatened to be done in pursuance thereof.' 'The act, or unlawful act done in the execution of such agreement, combination or contract is still punishable (if an offense), still considered in restraint of trade or commerce (if it is), and in proper cases may be enjoined or restrained.' That is to say, employers or employees in 'the furtherance of any trade dispute' may with impunity make any kind of an agreement they like that tends to advance their interests, but the moment they undertake by acts done 'or threatened by them' to execute their agreement thus authorized by law, if such acts 'would interfere with such commerce to the extent of restraining it,' they would be subject to restraining orders and punishment the same as now. That is what the committee says it thinks the bill means.

"Summed up in a sentence it means that it is unlawful to agree and contract and contrive to do what it is unlawful to do. If you undertake to carry out a valid contract, you may be committing a crime and be subject to a restraining order. The law expressly authorizes you to make a contract, and immediately punishes you if you undertake to carry it out. It is to be noticed that although the report of the committee bears evidence of extended investigation, it does not favor us with any case that even inferentially sustains so abnormal a proposition. There is no occasion to discuss it as a legal proposition. With all respect to the committee, it does not appear to be justified by common sense. It must impress the labor organizations as a profound concession to be allowed the high and lofty privilege of being allowed to agree to do acts that they are not allowed to perform. With such a great addition to their existing rights they may be expected to improve their condition. To place such a construction upon the bill is to insult the intelligence of the labor organizations which are promoting this bill and stultify the attorneys who drew it. If this opinion of the committee is sound, the bill accomplishes nothing. It is to be hoped that it is not for the reason that it entertains that view that the committee reports the bill with a favorable recommendation."

Senator Hoar Proposes a Distasteful Amendment.

These observations have had a very material effect upon the advocates of this legislation, but, in spite of a variety of suggestions for amendments to the bill, it was finally passed by the House in the original form as introduced and reported. In the meantime, however, Senator Hoar, chairman of the Senate Judiciary Committee, has been incubating on the measure and has evolved an amendment which has drawn upon him the universal condemnation of the labor leaders who have sought to secure this legislation. After having once reported this bill in exactly the same form in which it was presented and passed in the House, the Senator withdrew his report, and after devoting some time to an investigation of the subject again reported it with an amendment providing that the exemptions from punishment for conspiracies shall not apply if "the purpose or effect of such conspiracy shall be to create intimidation by a show of physical force, or the court shall find that the combination has for its purpose the occasioning of injury to the property or business of the complainant, or is likely to result in such injury, nor except such purpose be proved to the satisfaction of the court, or the court find that such is likely to be the effect."

Against this amendment memorials are now daily pouring into the Senate by the score. They proceed from labor organizations in all parts of the country, are in stereotyped form and in all cases "pray for the passage of the so-called Hoar Anti-Injunction bill to limit the meaning of the word 'conspiracy' and the use of 'restraining orders and injunctions' in certain cases and remonstrate against the passage of any substitute therefor." President Gompers of the American Federation of Labor has appealed to the Senate through the President *pro tempore* protesting against the amendment and urging the passage of the original bill which has now been passed by the House. After an elaborate analysis of its provisions, Mr. Gompers says:

President Gompers Opposes the Hoar Amendment.

"Organized labor seeks no immunity from the law applicable to all other citizens and people of our country, but must insist that those things which are legal when performed by other citizens ought not to be illegal when performed by members of organized labor, and it was to recover those rights to the members of organized labor that the original bill was drafted and introduced by the honorable Senator from Massachusetts.

"Up to this date there is not upon the statute books of the United States, or any of the sovereign States of the Union, any statutory provision which authorizes the issuance of injunctions in labor disputes. The amendment last proposed by the Judiciary Committee of the Senate not only vitiates the original purpose and intent of the bill, but supplies the statutory authority upon which injunctions may be issued *ad libitum*.

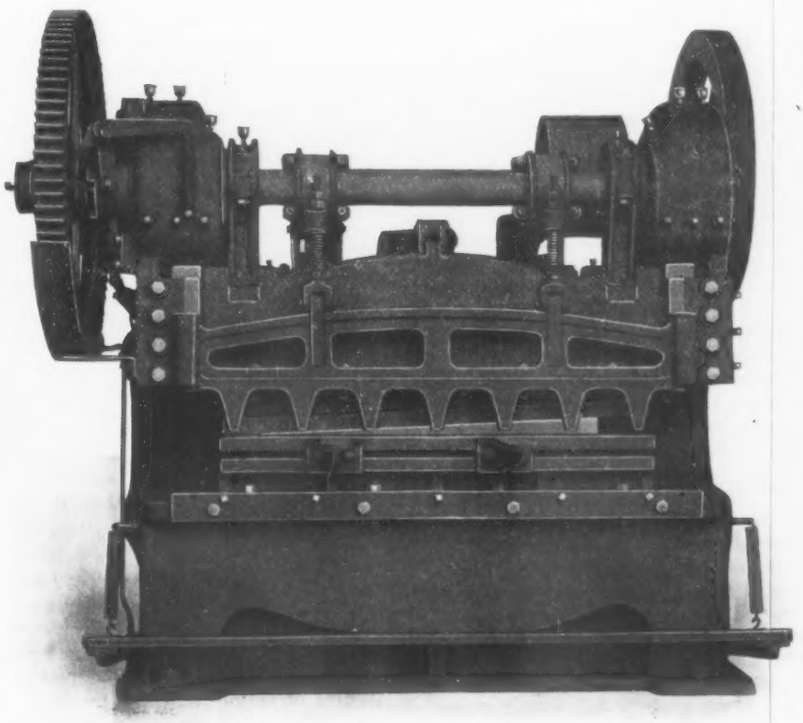
"Organized labor is seriously concerned in the effort to restrict the issuance of injunctions, and particularly so that they shall not be applicable in the disputes between workmen and their employers. Deeply affected as we are and earnest as is our purpose to have Congress pass such a law, the amendment proposed by the committee in its report is so subversive of the very purpose and principle for which the bill was drafted that we would much prefer the defeat of the entire measure should the objectionable amendments be retained therein. Without further legislation, we can, at least, protest against the courts' usurpation of power. The bill, as amended, if passed, would confirm by statutory authority this very usurpation."

Up to the present time the Senate Judiciary Committee has shown no disposition to modify the amendment of which Mr. Gompers complains. The dangerous character of the bill in its original form has been pointed out by hundreds of manufacturers and attorneys in all parts of the country, and, as stated in *The Iron Age* last week, the National Manufacturers' Association at Indianapolis recently passed resolutions denouncing the measure. With this light on the subject it would hardly seem probable that the Senate committee would be willing to accept the House bill, hence there is some prospect that the legislation may fail because of the differences of opinion between the Senate and House committees; nevertheless all who oppose the provisions of the measure will consult their own interests and strengthen the position of the Senate committee by protesting against the passage of the House bill. W. L. C.

A New Multiple Punching and Shearing Machine.

The accompanying illustration shows a sheet steel punching and shearing machine designed by Williams, White & Co. of Moline, Ill. It is shown equipped with shears which will split a sheet 50 inches wide in the center, the throat being 25 inches wide. The machine is capable of splitting ⅜-inch plate. A cutting off blade passing below the lower shear blade its entire length can be put on; it will cut off a sheet ¼ inch thick and 60 inches wide, the space between the housings being 62 inches. The shears can be removed readily and punching tools applied; the punching capacity being 15 holes ½ inch in diameter through ¼-inch plate without staggering. The extreme distance between the centers of the outside holes is 70 inches. The machine is also equipped with automatic clamp for holding the work firmly while the machine is in action. This clamp is operated by two cams keyed to the main shaft, and is elevated by two counterweights attached to the bridge tree at the rear of the ram. The main shaft is one solid forging, with the exception of the automatic clamp cams, the two main eccentrics being forged solid with the shaft. This necessitates a provision in the main bearings for allowing the shaft with these eccentrics to pass through them when taking its final position during the process of erection. This point is accomplished by making the lower half of the main bearing removable. The lower part of the bearing rests on a tapered gib, which can be adjusted for wear by screws passing through the main casting and bearing against the gib. In operation the machine is controlled by an automatic stop clutch, and by pressing the foot treadle down and releasing it immediately the machine makes one complete stroke, or one full revolution of the main shaft, and the ram stops up at the highest point.

The main frame is made of one casting, which necessarily makes the machine much stronger and stiffer than where the table and bridge tree are bolted to the housings. The bridge tree connecting the housings on this machine is directly back of the ram. The machine weighs 27,000 pounds and is driven by a belt. It can be built for electric motor or steam drive.



A NEW MULTIPLE PUNCHING AND SHEARING MACHINE.

Notes from Mexico.

Activity in Railway Construction.

DURANGO, May 5, 1902.—Work is being pushed upon many lines of railway. There are also reports abroad that lines projected but for one or another cause left in abeyance are soon to be constructed. Among the latter is the branch of the Mexican International from this city to the port of Mazatlan, on the Pacific Coast. A start was made two years ago upon the grading of this important line. There are rumors that the recent visit of Mr. Harriman to Mexico is to be followed by an early resumption of work upon this branch.

Incidentally, it may be mentioned that the new Monterey Steel Works are also said to have booked orders for a large tonnage of rails—300,000 are the figures quoted—some of which are for the International Railway Company and the remainder for the National. The latter is pushing ahead the work of making the entire track of standard gauge. The southern division of the Vera Cruz & Pacific Railway, whose terminus is at Santa Lucrecia, on the National Tehuantepec Railway, is about completed. With the latter in operation there will thus be a direct railroad route from the City of Mexico to the port of Santa Cruz, on the south of the Tehuantepec Isthmus.

The Crop Outlook.

Foodstuffs have enhanced in price in the southern section of the country. A great deal of anxiety is manifested in regard to the coming crop season. There was a scarcity of rain last year, causing a short crop of corn and other staples in several States. It is feared that should the rains, which have not yet commenced in the northern part of the country, be long delayed, or not more copious than last year, the result will again be small crops of the staples, which are the chief dependence of the poor and middle class people, consequent high prices and, possibly, suffering. J. J. D.

Jones & Laughlins of Pittsburgh have ordered from the Pressed Steel Car Company 100 steel cars of 200,000 pounds capacity each. These cars will have double the capacity of the strongest cars now in use.

The Storage Battery in the Commercial Operation of Electric Automobiles.

Under the above title W. H. Palmer, Jr., presents a valuable contribution to the *Electrical World and Engineer*. From this paper we take the following:

Electric cab service in New York City was inaugurated in the spring of 1897 by the Electric Carriage & Wagon Company, with an equipment of 12 hansoms and one surrey. To-day that service, conducted by the New York Transportation Company, has grown to such proportions that upward of 300 vehicles are in daily operation, running an average of nearly 5000 cab miles per day. That the service performed by these vehicles is successful, from the point of view of the patrons, is shown by the fact that, at rates equal to, or in excess of the rates charged for the highest class of horse livery service, far more applications for service are received daily than the company, even with its increased equipment, is able to accept.

The operation of hansoms and broughams constitutes the greater portion of the company's business, and the portion upon which accurate figures are most easily obtainable, and the statements which follow have been based upon the vehicles and batteries used in that service.

About one and a half batteries are kept in commission for each vehicle operated. This number is sufficient to meet the requirements of service calling for the use of vehicles at all hours, both day and night. Of these, about two-thirds are, at present, of the "Chloride-Manchester" type, and one-third of the "Exide" type—both the product of the Electric Storage Battery Company—one or the other being used according to the nature of the work to be done by the vehicle. No batteries of any other type are used by this company. Tests have been made of the other types of automobile cells which have from time to time made their appearance, but none have promised or performed so well as those now in use.

Chloride-Manchester Battery.

The Chloride-Manchester elements are so well known that a detailed description of them should be unnecessary. The standard brougham or hansom battery of this type consists of 44 cells having 3 Manchester positive and 4 Chloride negative plates. The weight of the battery complete in the tray, with all connecting straps, &c., is 1790 pounds, and the capacity 108 ampere hours at the three-hour rate of 36 amperes. These batteries as originaly furnished were assembled with corrugated perforated hard rubber separators between the plates. These separators were unsatisfactory for various reasons. One of the principal sources of trouble was in the tendency of these separators to flatten out if, during the hot weather of the summer months the batteries, for any reason, became slightly overheated. The flattened portions would then form pockets in which the active material, which is always slowly being thrown off from the surfaces of the plates, would collect, quickly causing partial short circuits, leading to dead or weak cells, and, if neglected, to more serious trouble, if not the total loss of the plates. This was partially overcome by employing a heat proof separator, which, being corrugated before being vulcanized, was much less apt to flatten. These were, however, still unsatisfactory. To economize space, the distance between adjacent plates in the cells is necessarily small, and particles of active material frequently lodged in the perforations, forming the nucleus of bridges which gradualy built themselves across from plate to plate; or, in assembling or repairing the cells, a careless workman might allow a quantity of lead, melted under the hydrogen flame, to run down between the plates, which, rivetting in the separator perforations, would eventually cause a partial short circuit, at once difficult to detect and remove. Moreover, the first cost of the separators was great, and being brittle, many were broken in the operation of cleaning and repairing the cells, constituting a constant source of annoyance and expense.

The Electric Storage Battery Company therefore set themselves the task of providing a substitute for this expensive and unsatisfactory separator, and about a year ago brought out a grooved wood separator, without perforations, which is now used in all batteries of this type, and which is free from all of the above objections. These separators are ⅛-inch thick, with vertical grooves 3-64-inch deep, on both sides. The distance between centers of grooves is ¼ inch. The width of the separators is equal to, and the hight ½ inch greater than the corresponding dimensions of the plates. Being without perforations, they form practically a continuous diaphragm between the plates.

Partial short circuits are almost entirely prevented, and, in the rare cases where they do occur, can be readily removed. Cleaning is necessary at less frequent intervals, and the life and capacity of the elements are therefore conserved and the efficiency increased. The first cost of these separators is small, and with a life of from 3000 to 5000 miles the maintenance cost is very low. These separators do not increase the internal resistance of the cells.

Connection between the battery and vehicle wiring is made by means of copper terminal plates mounted upon the sides of the tray. On the sides of the battery compartment in the vehicle are spring mounted contact blocks, which have pressure contact with the plates on the tray when the battery is in position in the vehicle.

The 44 cells comprising a battery are connected in one series. This is a decided improvement upon former practice, when two, and even four series were the rule.

The weight of a standard brougham, with battery, driver and two passengers, is about 5300 pounds. Such a vehicle, when in good condition, will consume, at the normal running speed, on level asphalt, about 50 watt hours per 1000 pounds per mile, or 265 watt hours per vehicle mile. This will be increased if the vehicle is not in good order, if the retardations because of traffic are very numerous, or if the streets traveled over are rough or covered with mud or snow. A fair average for reasonably clear streets has been found to be 60 watt hours per 1000 pounds per mile, or 318 watt hours per vehicle mile.

The capacity of the battery at the three-hour rate is, as stated, 108 ampere hours. As the average voltage of discharge of 44 cells at his rate is about 84 volts, the watt hour capacity is about 9072 watt hours.

The mileage capacity under average conditions will, therefore, be 28.5 miles. The weight, and consequently the power consumption, of the hansom are slightly below these figures, but the difference is not great. The radius of action indicated by these figures is ample for the bulk of the service which vehicles are called upon to perform in and about New York. It is necessary, however, to allow a relatively high margin of safety to insure reliability, since imperfections in the vehicle, a battery not fully charged, or snow covered streets, may materially reduce the mileage capacity. In order, therefore, to care for service requiring greater mileage on a single charge than could be secured from the Chloride-Manchester cells, and also to increase the margin of safety, the Electric Storage Battery Company were asked to submit for trial a battery of higher capacity.

The Exide Battery.

Having anticipated this demand, the manufacturers had for some time been engaged in exhaustive tests of various types and forms of plates, and, as the result of this work, the first battery of the Exide type was furnished in the fall of 1900. This battery constitutes a signal advance in the art of storage battery construction. Presenting to the casual view no distinctly new features, it nevertheless embodies principles never before brought together and which combine to secure, in a greater degree than has hitherto been obtained, the three necessary features of a commercially successful automobile battery—high capacity, long life, and, if the phrase be pardonable, a strong constitution—that is to say, freedom from structural weakness and the ability to withstand without serious injury a great deal of neglect and abuse. The advent of this battery has given to the electric automobile industry a renewed impetus.

As it is a comparatively recent development, a somewhat particular description of its construction and capabilities should be of interest.

The plates are of what is generally known as the pasted, or Faure type. The negative plate consists of a grid made of an antimonious lead sheet, around which a frame of sufficient weight to secure the necessary stiffness and strength has been cast. The body of the sheet is filled with perforations, evenly spaced at small intervals. These are made by a tool which does not remove any material, but instead tears its way through, leaving numerous small clawlike projections around each hole, which are curved back toward the sheet, forming a series of hooks. Half of the perforations are made from one side and half from the other, so that after the operation is completed both sides are thickly studded with these little hooks.

Both sides of this grid are then pasted with litharge. The paste is held to the grid by the little hooks and is also riveted through the perforations, giving all portions of the mass a tenacious hold upon the support, and upon each other. There are no isolated pellets to shrink and drop out, no large masses pasted against a flat surface to scale off, and but little of the support exposed, leaving the whole of the faces of the plates active and giving a maximum rate of discharge per unit of area. The distribution of the mass of active material is nearly ideal. Being applied in a thin layer, all parts of it are close to the current carrying support and in a position to give maximum capacity per unit of mass. The thickness of the finished plate is 3-16 inch.

The grid of the positive plate is of the cage type, consisting of thin vertical ribs, the edges of which are flush with the faces of the plate, and which are connected by small bars having a triangular cross section, the base of the triangle being at the face of the plate. These connecting bars on one face are staggered with those on the other. This grid is pasted with red lead and formed in the usual way, the thickness of the finished plate being 7-32 inch. The active material is in the form of continuous pencils, of rectangular cross section, extending from the top to the bottom of the plate. The thin flat ribs are on two sides of the pencils, and the triangular cross bars are imbedded in the other two sides, which constitute the faces of the plate. The design of the grid gives a maximum of strength and stiffness with a minimum of weight. The continuity of the material combined with the cross bars holds it firmly in place, while at the same time provision is made for its expansion and contraction. In service the active material is gradually eroded from the surfaces. The bars, being imbedded in the material, contact is maintained until the amount of active material is so reduced as to no longer be sufficient to give the proper capacity. The separation of the faces of the plate into relatively small sections by the ribs and bars prevents the rapid removal of the active material by the wash of the electrolyte.

Th separators used in these cells are of wood and similar to those used in the Chloride-Manchester batteries. A plain perforated hard rubber sheet is also placed against each face of the positive plates.

The standard brougham or hansom battery of the Exide type consists of 44 cells of the T V-9 size, having four positive and five negative plates. The rubber jar is the same as that used for the T V-7 Chloride-Manchester cell, and the batteries are assembled in trays of the same size, making the two types of batteries interchangeable in the vehicle. The weight of this battery, complete with tray, &c., is 1650 pounds, or 140 pounds less than that of the Chloride-Manchester type. The capacity is 156 ampere hours at the four-hour rate of 39 amperes. The average voltage during discharge is 87 volts; the watt hour capacity, therefore, is 13,572 watt hours, an increase of 50 per cent. over that of the Chloride-Manchester batteries and of 62.5 per cent. per pound. Using the figures for average vehicle consumption already given, the mileage capacity will be, under average conditions, 42.7 miles.

The battery policy of the New York Transportation Company necessarily depends very largely upon the question of cost of operation per vehicle mile. It has, therefore, been most gratifying to find, after a year of operation, that the Exide battery not only provides a sufficient mileage capacity for all classes of metropolitan service, but at the same time can be operated at a cost, including maintenance, but little in excess of that of the Chloride-Manchester and within the limits of reasonable expense. This conclusion is based upon the results obtained from 75 batteries, which have been in continuous service for about one year.

All batteries are removed from the vehicles for charging. This is done both to facilitate inspection and to avoid the loss of time and the other complications that would result from having the vehicle lie idle during the charging period. The batteries are handled entirely by machinery. Labor is thus reduced to a very low figure. Current for charging purposes is taken direct from the high tension, alternating mains of the New York Edison Company, at 6600 volts, 25 cycles. This is transformed and converted to direct current at pressures from 98 to 110 volts.

Mileage Per Charge.

The average mileage per charge made by the Exide batteries in regular service is only 20 miles. The necessity of sending out every vehicle each morning, with ample power to meet the extreme possible requirement of every customer, makes it difficult to increase this average, although the cost of renewal would be decreased could it be done. The operation of batteries on partial discharges also means a reduced efficiency, as mentioned above. The reason for this will become evident from a consideration of the following, taking, for instance, an Exide battery having a capacity of 13,572 watt hours. If the watt efficiency on full discharges be taken as 75 per cent., the charge after a full discharge will amount to 18,096 watt hours, or an excess of 4524 watt hours. If, however, only one-third of the capacity be taken out, or 4524 watt hours, it will still be necessary, in order to fully charge the battery, to give an excess charge very nearly as great as in the former case, or, say, 4200 watt hours, making a total of 8724 watt hours, or an efficiency of only 52 per cent.

The private owner of an electric vehicle has, for these reasons, a decided advantage over a company renting them, as, knowing in advance the service required, he can operate his battery up to a much higher average mileage per charge, increasing its life and efficiency.

The 75 Exide batteries placed in service by the New York Transportation Company nearly a year ago had made up to Feb. 1, 1902, an average of 3,742 miles each. Seven of them had made over 4500 each, the maximum being 4958 miles. Thirteen of these 75 batteries had been retired from service up to February 1. Two of these were withdrawn from service because of their having been involved in accidents, in which a number of the plates were damaged beyond repair. The others have been withdrawn from time to time, not because they were unfit for further service, but to provide plates for necessary renewals and replacements in the remaining batteries. The idea has been to treat these 75 sets as a unit, gradually weeding out the plates which, through accident or use, fall below the rated capacity, and in this way to secure figures on the average life of the plates.

The Life of a Battery.

A very rigorous standard has been adopted in determining the end of the life. No battery is allowed to remain in service after it falls below its rated capacity, as given above. This is made possible by reason of a most valuable characteristic of cells of the Exide type—*i. e.*, the maintenance of a very constant capacity during the most of the life of the plates. In other words, the capacity upon which the above figures are based is not the maximum reached by the cells in the course of their life, nor the average capacity during that life, but is the minimum capacity. The initial capacity is about 6 per cent. above this capacity, or 4½ hours at 39 amperes. This increases during the first 20 to 25 discharges to a maximum of 25 per cent. above the rated capacity, or 5 hours at 39 amperes. From this point it gradually falls until the rated capacity is reached. The end of the life is

then at hand, the fall in capacity from this time on being very rapid. Rating the cells on this basis results in great satisfaction to the user, as the average capacity during the whole life is upward of 12 per cent. in excess of the rating. The average maximum capacity has been given as 25 per cent. higher than the rated capacity, or 5 hours at 39 amperes. This is a conservative figure, many batteries rising as high as 5¼ to 5½ hours at that rate, and few failing to go as high as 5 hours.

The high capacity attained by these batteries has made possible continuous runs on a single charge far in excess of the 42.7 miles given as the mileage capacity under average conditions. The New York Transportation Company appreciate that an abnormal performance under special conditions has little practical value, and no special effort has been made to establish a record. Runs of over 60 miles have, however, been made on several occasions, both in regular operation and under test conditions. The average capacity, as ascertained by recent test discharges of the seven batteries which had made, up to February 1, over 4500 miles, is 4¼ hours at 39 amperes. All of these batteries are still in operation and doing as good work as at the beginning of their life. The average capacity of all the other batteries still in service (62 out of the original 75) was, on February 1, about 4½ hours at 39 amperes. A conservative estimate of the average life which will be obtained would seem, therefore, to be not less than 4500 miles. This refers only to the positive plates. The negative plates in all of these batteries show much less deterioration than do the positives, many being apparently as good as when first placed in service. There is no doubt but that a majority of them will be able to outlast a second set of positives.

Assuming that only one-half will have a life double that of a set of positives (and this estimate is a safe one), the total life of one-half will then be 4500 miles, and of the other half 9000 miles, or an average life for all negative plates of 6750 miles. If, then, the life of the positives be 4500 miles, the average life of all plates will be 5625 miles. At the end of this life the plates are still worth from $30 to $40 as scrap lead.

These figures have been most carefully checked and are believed to under rather than overstate the life of elements of this type. The life of the Chloride-Manchester elements is much greater than that of those of the Exide type, and has not been so accurately determined. As operated by the New York Transportation Company, these batteries suffer, in common with the Exide batteries, in being necessarily operated on a mileage per charge much below their capacity, the average being only 10 miles. As an average of but one charge per day is given, the yearly mileage of these batteries is in the neighborhood of 3600 miles. The oldest batteries of the Chloride-Manchester size now in use have been in service only two years and show but little deterioration except where there have been adverse conditions.

Use of Obsolete Batteries.

The vehicles used during 1897, 1898 and 1899 were equipped with various sizes of battery, and it was not until 1900 that an equipment was secured using a uniform size in all vehicles of the brougham and hansom types. Many of the older vehicles were sold and others were reconstructed to adapt them to use the new size of battery. The older batteries, therefore, became obsolete before the end of their life had been reached. The company still has in its possession many of these old sets, and they are gradually being made use of by reconstruction and adaptation to the present equipment.

Another use which is being made of these obsolete batteries is in connection with the express cars operated by the Metropolitan Express Company, one of the subcompanies owned by the Transportation Company. These cars are at present equipped with both plows and overhead trolley poles, adapting them for operation on either the underground or overhead systems at will. To still further increase the scope of operation, a number are to be equipped with storage battery auxiliaries, making it possible to run them on the tracks of the various horse car lines as well. Cars thus equipped with batteries formerly used on the vehicles have been successfully experimented with, and the work of preparing a number for this service is now under way.

Difference in Cost of Operation.

But while data regarding the Chloride-Manchester type, of accuracy equal to that of the Exide type is not at hand, much is known about the life of individual batteries, and fair conclusions may be drawn from an examination of the older of those batteries now in service which have already made from 5000 to 8000 miles. A calculation based on all available information gives as the life of Manchester positive plates 12,000 miles, and as that of the Chloride negatives 20,000 miles, or an average for both of 16,000 miles, or 140 per cent. more than that of the Exide plates. This would appear to constitute a very material difference in the cost of operation of the two types, and, taken alone, it would do so. But —and this point is too frequently overlooked—there are other factors in the total operating cost. The labor in handling and charging, for instance, will be, per vehicle mile, twice as great in the case of the Chloride-Manchester battery, averaging 10 miles per charge, as for the Exide running 20 miles per charge; the labor to charge each being approximately the same. The Exide operated 20 miles per charge is also somewhat more efficient than the Chloride-Manchester running 10 miles per charge, as explained above. These considerations reduce the apparent difference in cost of operation and the greater mileage capacity of the Exide makes it, for some classes of service, far preferable.

In the new station, with the better care made possible by increased facilities, the number of cases of power exhausting has been reduced to an average, during the last nine months of operation, of only 1.31 per 1000 vehicle miles. These figures include power exhaustion from all causes, and the great majority are due to improperly oiled bearings, defective motors, snow or mud covered streets, carelessness on the part of drivers in wasting power, attempts to make abnormally long runs, &c. These figures are being improved upon, but already the showing speaks well for the batteries and for the system of charging and caring for them.

The business of the New York Transportation Company has increased greatly within the year, and is limited only by the capacity of the equipment. Disregarding pleasure vehicles, suitable only for summer use, over 90 per cent. of the vehicles owned are in constant operation, less than 10 per cent. being the proportion out of commission from day to day for repairs of all kinds. To sum up this presentation of the situation, the New York Transportation Company are demonstrating in their daily business, that the electric automobile has been developed to the point where, in reliability, radius of action and operating costs, it meets all the requirements necessary to commercial success, and that the development of a storage battery, especially adapted to work under the rigorous conditions imposed, has contributed greatly to this result.

The Doyle Air Burner Company.

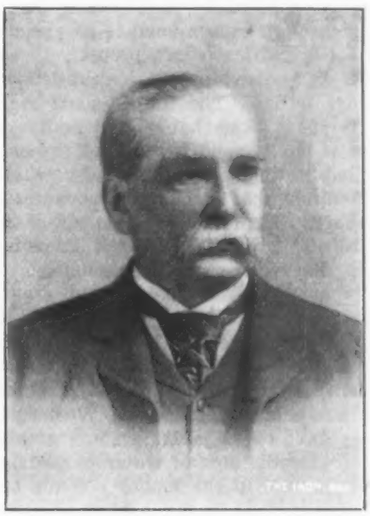
An effort is being made to locate the factory of the Doyle Air Burner Company, at Aurora, Ill. The company were recently incorporated under the laws of New Jersey with a capital stock of $2,000,000. The terms upon which the company are willing to locate at Aurora are the donation of a site of 20 acres and that citizens of Aurora subscribe to $100,000 worth of stock in the Doyle Air Burner Company, at par. A committee of three, consisting of D. W. Simpson, J. O. Mason and H. A. Uehren, have been appointed by the Merchants' Association of Aurora to canvass the matter thoroughly with a view to number the Doyle factory among the city's industries. It is believed by business men that little trouble will be experienced in securing the necessary subscriptions to the capital stock of the new enterprise as demanded by the Doyle Company. In fact, plans are being laid upon the assumption that the factory has already been secured and construction will be commenced in the very near future. The plant will consist of three buildings, a foundry, containing two cupolas, with a ca-

pacity of 25 tons of castings per day; a building in which to assemble the stoves, and a finishing shop.

The officers of the company are: President, T. D. Hurley; vice-president, A. G. Thompson; secretary, Ed. E. McMorran; treasurer, John Cudahy; directors, T. D. Hurley, A. G. Thompson, E. E. McMorran, John Cudahy, F. J. Doyle, E. Humphrey, George W. B. Robins, T. J. Hudson, H. A. Frambach, J. H. Frambach and Jos. V. Clark. At present the Doyle stoves and furnaces are being manufactured at Chicago in a modest way.

Miers Coryell, a Pioneer American Engineer.

The early history of steam engineering in this country would be incomplete without a record of individuals who have borne a prominent part in it, and this Miers Coryell certainly has. Up to within a very few years he has been actively engaged in his profession, having been retained as advisor to many of the leading financiers of the country in furthering their plans and in his own private practice, and they have relied implicitly upon his experience and sagacity. It would be a long list if all of these engagements were named in full, and



MIERS CORYELL.

that I shall not attempt to do, naming only such firms as John M. Forbes & Co., James G. Hill and Russell & Co., in whose interests he spent nearly 12 years in China. Besides acting on the Naval Advisory Board of this country twice, in 1850 and 1882-84, Mr. Coryell was for several years consulting engineer in charge of the well-known Stevens Battery, built during the Civil War, and attending to his own private practice as well.

Miers Coryell was born in New Hope, Pa., October 30, 1825, and is the son of Lewis S. Coryell, a prominent man in the community in his day. Miers Coryell came to New York in 1841 and was apprenticed to the firm of T. F. Secor & Co., well-known engineers of that period, and shortly after his majority became superintending engineer of the Morgan Iron Works, New York, then owned chiefly by Charles Morgan & Sons, where he remained for many years, building in that time engines and boilers for all kinds of work, principally beam engines for sound, river and ocean service, which type was then at the hight of its popularity. Some of these engines, over 50 years old, are at work to-day in steamers engaged in harbor work, the thoroughness with which they were constructed making them still serviceable.

After some years in this pursuit Mr. Coryell resigned to go into business for himself in the firm of Rogers & Coryell, doing the same kind of work, but the connection not proving satisfactory they dissolved partnership and Mr. Coryell went to China, where he remained several years. During his Chinese experiences he made many trips to England, where he became widely known to the leading engineers of that country and established friendships which still exist. After leaving China he returned to this country, making annual visits abroad, keeping up his foreign connection. Mr. Coryell is a member of all the leading engineering societies of the period and is usually present at their meetings. Although an old school engineer, by reason of his long and honorable career and record, he is thoroughly posted upon present practice and keeps abreast of it.

Very few of the old-time engineers of this country are now living. Horatio Allen, Charles Copeland, Erastus Smith, Theodosius Secor, Joseph Belknap, James P. Ailaire and others of lesser note passed away some time ago, and though we yet have Andrew Fletcher, full of years and honors, Stevenson Taylor, Horace See, Charles H. Haswell, George W. Melville and Miers Coryell the "Old Guard's" ranks are sadly decimated. A newer and younger generation has seized the colors before they touched the ground and is bearing them on with credit to the profession. E. P. W.

Pacific Coast News.

SAN FRANCISCO, CAL., May 5, 1902.—The export trade keeps improving and the year will be larger than the last. There is no record of that trade with the Hawaiian Islands that will allow of comparison with former years, but it is larger than it was and is growing still. A great deal of this trade in machinery, and most of it in bicycles and other articles, is simply transit, where the goods are transferred from the car to the vessel and thence to their destination. The exports to China and Japan from this city for the year 1901 have been as follows:

	China.	Japan.
Bicycles	$19,685	$124,475
Instruments, scientific	12,916	50,119
Pumps, &c.	375	1,875
Castings	2,964	12,311
Firearms	810	3,176
Typewriters	8,022	14,288
Sewing machines	2,217	2,625
Tools	4,612	4,016
Boilers and parts	1,334	3,306
Cutlery	75	328
Machinery	22,934	164,250
Safes	307	1,744
Stoves	2,114	.....
Scales	569	.....
Pipe, &c.	9,015	5,817
Wire: China, 425,335 pounds; Japan, 188,623 pounds	8,882	16,546
Nails: China, 1,247 kegs; Japan, 51,035 kegs	2,405	117,645
Printing presses	222	.....
Locks	329	1,220
Saws	....	300
Cash registers, 3	270	.....
Hardware, various	9,771	29,240
Electrical goods	....	5,450
Steel	....	935
Steel railroad bars: Japan, 250 tons	....	10,500
Wire: Japan, 3,546,338 pounds	....	96,322
Bar iron: Japan, 29,890 pounds	....	779
Totals	$109,828	$667,267

Here evidently the Mikado's realm shows to great advantage.

The American Steel & Wire Company have just broken ground for a magnificent plant on Sixteenth and Folsom streets, this city. The works will cover 3 acres, the ground embracing altogether 6 acres. Here cables, wire rope and furniture springs will be the principal articles manufactured. The whole is under the management of Geo. H. Ismon. J. O. L.

The record of ore shipments in April from the ports of Cleveland, Erie and Ashtabula over the Pennsylvania lines was 420,000 tons. This is 70,000 tons more than was anticipated. As a result the carrying capacity of the roads is overtaxed. At Ashtabula ore is arriving so freely that it must go on the docks, in the absence of orders for shipments. May opened with the arrival of four vessels with 9000 tons of ore from Canadian mines on the north shore of Lake Superior destined for Pittsburgh and the Ohio Valley.

Lake Iron Ore Developments.

DULUTH, MINN., May 10, 1902.—A discovery of iron ore, which promises to be of high importance, has been made recently in eastern Ontario, near Georgian Bay. It has been examined by some of the leading engineers of the lake region, who pronounce it valuable. A width of outcrop of more than 100 feet of a slightly magnetic ore, almost a hematite, has been traced several miles, running a little west of north. It is considerably less than 100 miles from deep water on the lakes, and would reach the water at a point less than 40 hours' run from Cleveland. The ore in sight is estimated by some of the most prominent mining engineers of the United States at not less than 10,000,000 tons, and if the ore does not run into sulphur with depth, as do so many of the Canadian ores, the amount is very much greater this this estimate. The ownership of the property is now in the hands of Americans who have been closely identified with the steel business and ore mining. The original discovery was made not more than 18 months ago. It lies in a region that is practically beyond the limits of travel, though close to civilization, and in a district that had not been explored and not even surveyed until a short time ago.

April shipments of ore out of Lake Superior, not including Escanaba, amounted to 1,332,000 gross tons, which is 300,000 tons more than the corresponding ports sent out to June 1 last year. So there is a month plus 300,000 tons ahead of last year already. This will permit the movement of the expected total of the year without very much more crowding than was done in 1901. It is interesting to note that the three roads hauling ore out of Minnesota alone shipped during the month 970,000 tons, which was considerably more than half the total movement. This is not surprising, however, and has no exact bearing on future proportions.

The Deering Harvester Company's Mines.

Work has commenced on the Western Mesaba in opening the Deering Harvester Company's property in section 32, town 57-22, which is to be christened the "Hawkins." It will be September before railway communication can be established, and that means that nothing can be shipped from the stripped pit this year. Already a few men are commencing operation preliminary to sinking a shaft, and the ore to be mined this year will come from underground. It may be that 25,000 tons will be shipped in the season. The mine will next winter be developed as a milling proposition and a large amount of earth will be removed. There are in the property about 9,000,000 tons of an ore averaging 58 per cent. and possibly twice as much running on an average about 46 per cent. This latter amount cannot be considered as iron ore at present. The same interests will soon open their other property, situated in sections 11 and 12, town 57-21. This will be named the "Agnew," after the manager of the Mahoning. It contains 3,500,000 tons of ore running up to 61 per cent., quite largely Bessemer, and with the probability of no small addition to the quantity with further explorations. All the ore so far found has been upon the northeast 40 acres of section 11, and the 80 acres in the north one-half of the northwest of 12 have not been attacked by drills except cursorily. The fee of this property is in the hands of Alworth, Hull & Boeing, at a 25-cent lease, and the minimum output is 100,000 tons per year. The fee to the first mentioned tract is in the Mississippi Land Company, a timber corporation of which F. Weyerhaeuser is head, and the royalty is 20 cents, with 100,000 tons as the minimum. The Eastern Minnesota road will haul the ore from both under traffic agreements. Mr. Sellwood will have charge of the development of the properties.

Other Minnesota Developments.

At the La Belle Iron Company's properties near Mountain Iron and Elba, Mesaba range, the work of development is progressing fast. In the State lease near Montain Iron the stripping method of mining will be adopted. Steam shovels are on the ground for the removal of the overburden. At the mine near Elba underground mining has been started.

On the Vermillion range the old Minnesota is shipping more heavily than last year and will make an output 100,000 tons greater than then. There is, moreover, a considerably greater tonnage of ore in sight than a year ago. A new grade will be shipped this year, a "Soudan siliceous." The mine's best grade now runs about 67 iron and 0.075 phosporus. There will be sent out this season a considerable tonnage of Vermillion lump, for open hearth works.

With the continued development of the Ely group, especially of the Savoy, Sibley and Zenith mines, it is evident that the United States Steel Corporation have a splendid property there. The mines are showing up wonderfully well. It is interesting to note that the Zenith proved the financial ruin of several earlier holders, and that Savoy and Sibley were both abandoned as valueless. The Pioneer, of this group, is an immense property, but its development is of an earlier date and it has been better known than the other three for a year or two, since the Oliver Iron Mining Company took hold. Nothing has yet been done with "Section 30," though its owners met in this city again this week.

At the Michigan Mines.

Since the beginning of operations upon the Maas shaft of the Cleveland Cliffs Company, at Negaunee, there has been talk among mining men of the possibility of sinking through such a surface as encountered there with a steel cylindrical shaft, properly tied and braced, to be built on at the top by a hydraulic riveter as fast as the mass settles. The timber shaft at the Maas is holding its shape remarkably well and is going down finely, but it has seemed to some of the engineers who have visited it that a steel cylinder would overcome some difficulties that might be encountered with the timber shaft. Explorations near Negaunee on the "brickyard 40" progress well, and there is apparently a showing that will warrant considerable expenditure. The 40 is located upon the loop of ore that swings around from the Barasa and Negaunee to the Cambria and Lillie. It is more and more evident that this immediate territory is to be among the more important iron deposits anywhere, and will be of increasing value.

In the new shaft at the Great Western, Menominee range, they have been sinking a shaft with great speed. With a considerable flow of water to contend with they have sunk 75 feet in the month. While this does not equal what was done at the Aragon or at the Ashland, on the Gogebic, it is a creditable performance. At the Great Western they are now pumping water rapidly. The Groveland mine, which has been under exploration by Corrigan, McKinney & Co., has been abandoned and will be allowed to fill with water. Not enough ore was found to warrant development. The Roberts exploration near the Youngstown mine is showing well in a shaft started after two deep drill holes had showed where the ore was not. At 100 feet a crosscut will be run to find what there is. The new shaft at the Lamont has been connected through with the mine workings. Exploration will begin on the Dickie farm, north of Iron Mountain.

The Clergue Operations at Sault Ste. Marie.

At the Sault the new rail mill of the Algoma Steel Company has begun work. It is fitted to roll rails up to 80-pound section in 30 or 60 feet lengths. In a recent conversation, F. H. Clergue stated that the site for the tube works was being cleared and that this works and the steel mill would eventually employ 10,000 men. He further said that the land for some miles up the river, on both sides, was largely owned by his companies and that it was not held for speculation, but would be required for manufacturing purposes, and that he looked to see a city of 200,000 on the Canadian side of the river in due time. D. E. W.

The Wells Brothers' Company, the Goodell-Pratt Company, the Greenfield Machine Company, the Automatic Machine Company and the Massachusetts Tool Company of Greenfield, Mass., have agreed to run their plants on a basis of 55 hours a week from June 1 to October 1, the day hands to get 60 hours' pay. It is probable that F. E. Wells & Son will also agree to the same arrangement.

Canadian News.

The Crow's Nest Pass Coal Lands.

Last summer, as stated in these columns at the time, Colonel Taylor of Pittsburgh, commissioned by the Canadian Minister of the Interior, entered upon an examination of the Crow's Nest Pass Coal Company's coal fields, to determine the best place in which to select the 50,000 acres of coal lands to which the Government is entitled, the lands selected to be a fair average of the entire field. It may, for the sake of clearness, be recalled that the coal lands of the company at the Crow's Nest Pass were originally granted by the British Columbia Government as a subsidy to a railway project. The holders of the railway charter sold the latter to the Canadian Pacific Railway Company and a great portion of the coal lands was retained, the present Crow's Nest Pass Coal Company being formed to develop them. When the Canadian Pacific Railway Company acquired the railway charter in question they entered into an agreement with the Canadian Government in which they undertook, in consideration of a Dominion subsidy, to carry freight at specified reasonable rates and to allow other railway companies to use the new line. As the opening of the road would greatly benefit the Crow's Nest Pass Coal Company the latter agreed to certain concessions as well, one being to cede to the Dominion Government 50,000 acres of their coal lands. Colonel Taylor was engaged in ascertaining where the coal tract thus given up to the Government might fairly be selected. His report has just been submitted to Parliament. He recommends:

"That all the coal lying between Morrissey Creek and the outcropping of the seams on Lodgepole Creek be selected, and that a dividing line be drawn from a point at the junction of the north and south branch of Morrissey Creek, near where the present openings are being made by the Crow's Nest Pass Coal Company; from this point due north until it intersects with a line running east and west through the most southern side of the property, now owned by the Crow's Nest Pass Coal Company, on Marten Creek, and that the greater part of the 50,000 acres be selected to the east and south of these two lines. With a proper division made of the coal selected as above described at Morrissey Creek there might be two separate operations made in this creek, one of which could operate in the territory directly south of the creek and the other could work in the territory east and north. The next available place would be on Michel Creek and Marten Creek. This territory could be so divided as to accommodate two operations. These are the only two available places for operations that I saw, and I would classify in relative merits the operation on Morrissey Creek as No. 1 and that on Marten Creek and Michel Creek as No. 2. I wish to especially recommend to you the selection of the field at Morrissey Creek, as the present developments indicate that the coal is here at its maximum thickness, and lies in the mountain in such a way that it can be economically moved and operated, and there will be two main lines of railway easily accessible from this point."

Progress of Shipbuilding Movement.

The deputation of Canadian shipbuilders that went to Ottawa upward of a week ago presented a petition for a bonus of 10 per cent. on the contract price of vessels exceeding 1000 tons built and registered in Canada. It was also urged by the deputation, especially by the Maritime Provinces' members of it, that the present statutory annual subsidy of 2 per cent. of the cost of a dry dock, which the Government pays for a period of 20 years, be increased to 3 per cent. for the same term. The Government promised consideration.

A few days later this deputation of shipbuilders and of municipalities interested in shipbuilding was followed by a deputation of members of Parliament representing constituencies in Nova Scotia, Prince Edward Island, Ontario and British Columbia. They also asked a Government bonus for the shipbuilding industry.

Since then a step has been taken by the Government in the direction asked. The shipbuilding interests have pressed for protection against foreign built vesels having a British charter, under which they freely take part in Canada's coasting trade. To restrict this competition with the domestic marine the Minister of Justice, Mr. Fitzpatrick, introduced the following resolution, which was passed by the House:

"That it is expedient to amend the law respecting the coasting trade of Canada, and to exclude a foreign built British ship from that trade unless it has obtained a license, which the Minister of Customs may grant upon the payment of a duty of 25 per cent. ad valorem on the fair market value of the ship."

Of course this resolution is not itself an amendment of the law. Having been passed by the House, it will doubtless be submitted for approval by the British Government, as it touches an imperial question. If not repugnant to British policy, an amendment of the law in accordance with the resolution is certain to be made.

On April 30 a plebiscite was taken in Halifax on the question: "Are you in favor of the city of Halifax giving $100,000 to aid in establishing upon the shores of the harbor of Halifax a yard for building the hulls of iron and steel ships adequate to the construction of not less than 20,000 tons dead weight capacity annually?" The vote was overwhelmingly in the affirmative. By a similar vote Dartmouth, another city on Halifax harbor, gave the same answer to the same question. This ought to decide the matter, as Swan & Hunter of Newcastle-on-Tyne have said they would establish a plant on Halifax harbor for a local bonus of $200,000. Now that the two cities are practically pledged to grant that amount of aid the scheme should go through.

The Government's action in collecting a duty of 25 per cent. ad valorem on the "Minnie M.," a steamship brought from the United States to Sault Ste. Marie, Ont., by the Clergue syndicate, has been upheld by the Supreme Court.

To Promote Mining Interests.

The Ontario Bureau of Mines has arranged to hold a course of summer mining instruction at various centers. The rudiments of mineralogy, chemistry, &c., will be taught free of charge to miners, prospectors and any other persons interested enough to attend the classes opened in the several mining localities. The instructors will be Prof. W. S. Goodwin of the School of Mining at Kingston, and J. W. Bain, demonstrator in analytical chemistry at the School of Practical Science, Toronto.

Dr. A. P. Coleman, professor of geology in Toronto University, will spend the summer in the Sudbury region preparing a report on the mineral deposits there for the Bureau of Mines.

Prof. W. G. Miller of Kingston has been appointed Provincial Geologist and Inspector of Mines. Professor Miller has been for some time connected with the School of Mining at Kingston, and has occupied the chair of geology and petrography in Queen's University there. His appointement as Inspector of Mines is not the beginning of his services to the Bureau of Mines, as he has done important work for it in the economic exploration of Northern and Eastern Ontario, more particularly in connection with the iron, gold and corundum resources of these regions.

At the annual meeting of the Kingston School of Mining Dr. Goodwin, director of the school, reported an increase of 50 per cent. in the number of engineering students in attendance. A report was also read of Professor Miller's explorations in Northern Ontario, showing great mineral prospects there.

Minor Notes.

The Halifax *Chronicle* repeats very positively a statement made some time ago to the effect that the Nova Scotia Steel & Coal Company propose to go into the manufacture of railway cars. This was decided upon at a recent meeting of the directors. The works will be built at Trenton, N. S., close to the company's steel plant, and will consume 150 tons of steel per day.

The report that James Ross of the Dominion Iron & Steel Company had sold for delivery 90,000 tons of steel billets in Great Britain at $21 per ton has led some one to figure out and publish the value of the Government bounties earned in the filling of that order. Making al-

lowance for the sliding scale of the bounties on pig iron and steel, this calculator finds that they would aggregate $405,000 on the contract.

Montreal building operations are somewhat retarded by a shortage of structural steel. Drummond, McCall & Co. have been advised by their English houses that the latter will take no orders for execution in the next twelvemonth.

The Ontario Government diamond drill has been sent to Lount Township, in Parry Sound district, to test an iron ore property there.

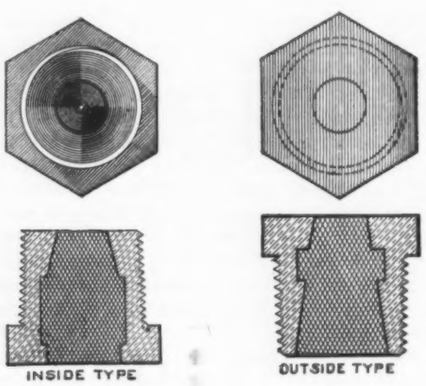
According to a dispatch from Sudbury, Ont., an iron ore deposit, about 25 miles north of that town, has been purchased conditionally by some Michigan parties.

The John Abell Machine & Engine Company of Toronto have amalgamated with the Advance Thresher Works of Battle Creek, Mich., and the Minneapolis Engine & Threshing Company. This arrangement enables the American manufacturers to supply the Canadian market without paying the duty, as they will operate the Abell works here.

The contract between the Canadian Government and the Ross Rifle Company has been signed and is now in force. The Ross rifle is adopted as the arm for the Canadian infantry and the weapons are to be manufactured in Canada. Quebec is to be the place selected for the company's factory. There is also a contract between the Government and Sir Charles Ross in which the Government undertakes to purchase all its rifles from him personally, giving a preliminary contract for 12,000 rifles. Sir Charles binds himself to supply all needed rifles. If at any time the Government decides to change the arm he is to have 12 months' notice, and at the end of that time he is to be in a position to supply the new weapon required. Any difference as to price is to be settled by arbitration. All rifle making machinery and tools not manufactured in Canada are to be admitted free of duty for the new factory. C. A. C. J.

The Lunkenheimer Fusible Plugs.

The recent action of the United States Treasury Department in enforcing the provisions of Section 4436 of the United States Revised Statutes, regarding the specifications as to the manufacture of fusible plugs, has attracted considerable attention to this article. Fusible plugs have been used on boilers for a great many years, and the Government, recognizing the important function of this boiler accessory, requires that all plugs used on boilers of steam vessels should be made of bronze and have no other filling but pure Banca tin.



THE LUNKENHEIMER FUSIBLE PLUGS.

Many plugs have been offered on the market which are filled with fusible alloys composed of other metals, which, although melting at very near the same point as Banca tin, were not absolutely reliable. Since the disaster at Philadelphia last fall the United States Steamboat Inspection Service of the Treasury Department has taken cognizance of the fact that inferior plugs were offered upon the market and issued a circular requiring that all fusible plugs should be filled with pure Banca tin and stamped with the manufacturer's name, and that an affidavit setting forth this fact should be filed with the inspector having charge of the boiler inspection at whatever point the plugs are used.

Herewith are illustrated two forms of plugs made by the Lunkenheimer Company of Cincinnati in conformity with the above requirements. These are of the outside and inside patterns, and are to be screwed in either from the inside of the boiler or from the outside through the fire box or shell.

Banquet of United States Steel Corporation Officials.

On Saturday evening, May 10, President C. M. Schwab, and other officials of the United States Steel Corporation were tendered a complimentary dinner in the Hotel Schenley, Pittsburgh, by local officials of the Carnegie Steel Company, the National Steel Company and American Steel Hoop Company. Of 42 invited to the dinner all were present except three, who sent regrets, these being W. P. Palmer, president of the American Steel & Wire Company, A. R. Hunt, superintendent of the Duquesne Steel Works, and George Lauder. Those present were as follows: Charles M. Schwab, W. E. Corey, E. J. Buffington, P. W. Moen, F. J. Hearne, George G. McMurtry, Veryl Preston, W. T. Graham, J. E. Schwab, C. W. Baker, W. B. Dickson, A. J. Major, James Gayley, W. B. Schiller, W. C. McCausland, James H. Reed, W. H. Singer, C. L. Taylor, D. M. Clemsen, J. J. Campbell, C. L. Miller, J. H. Slocum, J. H. Ward, H. P. Bope, W. W. Blackburn, Thomas Morrison, A. C. Dinkey, Captain L. T. Brown, James Scott, F. W. Jenks, John Reis, Thomas McDonald, John McLeod, Homer J. Lindsay, George E. McCague, D. G. Kerr, W. H. Peterson, W. J. Root, and Thomas Lynch. W. E. Corey, president of the Carnegie Steel Company, presented each guest with a solid silver circular card case, on one side of which was engraved "Souvenir of Banquet to Charles M. Schwab, by W. E. Corey, May 10, 1902." On the reverse side was the name of the recipient in bold script.

The Fixation of Nitrogen.

The Atmospheric Product Company of Niagara Falls have been incorporated with a capital stock of $1,000,000. The directors named are Charles S. Bradley, William E. Knight, William F. Crawford, Harry E. Knight, David J. Newland, C. Von Gruever and William P. Hammond, all of New York City.

In the organization of this company the world is given a glimpse of another field or branch of scientific research in which a notable success has been recorded. The company have succeeded in the fixation of nitrogen, taking the atmosphere as the raw material and a basis of operations. When Lord Kelvin was recently in this country he spent a half day in the experimental quarters of this company at Niagara Falls and witnessed the success accomplished. He freely and frankly stated that it was the most remarkable thing he had seen on this side of the ocean. Lord Kelvin was deeply interested, and it has been intimated that one of the main objects of his coming to America on this recent third visit was to examine into the claims made by the men at the head of this company, who were incorporated while he was in America, in fact just after he had witnessed the success of the wonderful process.

While the Atmospheric Product Company will erect their first factory at Niagara Falls only a single commercial unit is in operation now. The fixation of nitrogen on a commercial scale has long been a subject of research in the scientific field. In 1785 Priestly discovered that when an electric spark was discharged the air immediately surrounding underwent a chemical change, and later the experiments of Cavendish agreed with the findings of Priestly. Since then the problem has been most perplexing, but now the experiments which have for some little time been conducted at Niag-

ara Falls have raised the curtain of mystery, and the fixation of nitrogen is an accomplished fact.

In the experimental station at Niagara a chamber about 10 feet high is used and through this cool, dried air is led. This air is made to pass through a region where electric arcs of small current and high electromotive force are discharging, and it is about these arcs that the chemical change in the atmosphere takes place, the air becoming a brownish red gaseous substance, trioxide of nitrogen. From the chamber the air is led to an absorption tower, where it is brought in contact with whatever substance of which a nitrate is desired. It is stated that by leading the gas through pure water pure nitric acid results, and if it is led into contact with caustic potash it becomes saltpeter. In contact with caustic soda it becomes Chile saltpeter. With scores of substances it forms salts of great value. This manufacturing various products from the air opens up a wonderful vista of possibilities, and it is said that those in the company hope soon to see starch manufactured in their laboratory. When this is done the result becomes of value to the food products of the world, and it is already prophesied that the company's product will yet have a material influence on the future wheat crop of the world when used as a fertilizer.

Philadelphia Foundrymen's Association.

The one hundred and eighteenth regular meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club, Broad and Walnut streets, in that city, Wednesday evening, May 9. The meeting was called to order at the usual hour, President Thomas I. Rankin occupying the chair. There was quite a representative attendance, among whom may be mentioned the following:

Thos. I. Rankin, Abram Cox Stove Company, Philadelphia.
Jas. S. Stirling, Harlan & Hollingsworth Company, Wilmington, Del.
Antonio C. Pessano, Geo. V. Cresson Company, Philadelphia.
W. W. Nichols, Tabor Molding Machine Company, Philadelphia.
J. T. Ramsden, Tabor Molding Machine Company, Philadelphia.
G. R. Sullivan, Rogers, Brown & Warner, Philadelphia.
David Reidenhauer, I. A. Sheppard & Co., Philadelphia.
Thos. H. Furlow, Jr., Furlow Sanitary Brass Mfg. Company, Philadelphia.
D. C. Warren, the *Foundry*, Cleveland, Ohio.
Geo. Haag, North Wales Foundry Company, North Wales, Pa.
Albert J. Meyer, Abram Cox Stove Company, Philadelphia.
Frederick Sabin, North Wales Foundry Company, North Wales, Pa.
A. Belfield, H. Belfield & Co., Philadelphia.
Ed. Spurr, Enterprise Mfg. Company, Philadelphia.
August Williams, Enterprise Mfg. Company, Philadelphia.
Thos. B. Harkins, Harkins Foundry Company, Bristol, Pa.
R. C. Oliphant, Trenton Malleable Iron Company, Trenton, N. J.
J. Thompson, J. Thompson & Co., Philadelphia.
A. A. Miller, *The Iron Age*, Philadelphia.
Wm. Braun, John Braun & Sons, Philadelphia.
A. E. Outerbridge, Wm. Sellers & Co., Philadelphia.
Fred. W. Lewis, Tabor Mfg. Company, Philadelphia.
E. H. Mumford, Tabor Mfg. Company, Philadelphia.
Wm. H. Ridgway, C. Ridgway & Son, Coatesville, Pa.
H. O. Evans, Thos. Devlin & Co., Philadelphia.
Thos. Devlin, Thos. Devlin & Co., Philadelphia.
Geo. C. Davis, chemist, Philadelphia.
J. L. Keightley, Geo. V. Cresson Company, Philadelphia.
I. Roberts Newkirk, J. B. Newkirk & Co., Philadelphia.
Oregon J. Ward, Howe Scale Company, Philadelphia.
J. Hy. Pepper, brass founder and finisher, Philadelphia.
John MacGhie, the *American Machinist*, New York.
John A. Kewshaw, the *American Machinist*, New York.
Howard Evans, J. W. Paxson Company, Philadelphia.

A paper entitled, "The Relative Position of Employer and Employed," by Edward B. Gilmour, Milwaukee, Wis., was read by title, after which E. H. Mumford of the Tabor Mfg. Company, Philadelphia, was introduced and addressed the meeting on the subject of "The Tabor Vibrator Molding Machine," particularly adapted for castings of magnitude. Mr. Mumford stated that while the Tabor Company had built probably larger power ramming molding machines for general use and had still larger machines in prospect than were as yet common in the trade, the idea that machine molding was at once to be applied to such castings as loam cylinders with blanket cores, 30-ton bed plates, &c., was more or less visionary. Molding machines, he said, were variously understood by the trade. Some were called molding machines which only rammed the mold; others which only drew the patterns, and yet many machines did both.

Mr. Mumford then showed on the screen a power ramming machine for molds of large size which was simply a big power squeezer. He next showed a large sized hand ramming molding machine with 10-inch pattern draft, which only drew the patterns. There was then shown a complete machine for both power ramming and drawing the patterns for molds 30 x 48 inches, the machine having a 12-inch pattern draft. He explained that in this large machine, while the deeper pockets of sand around the pattern had to be more or less tucked by hand, yet the main body of the sand in a flask, each half of which is 16 inches deep, was rammed by the machine itself, and also showed how the entire operation of the machine was carried out from one station by two valves. The Tabor molding machines as built to-day do their ramming by a quick blow. The speaker thought this method of ramming had some advantages over slow pressure inasmuch as it took advantage of the fact that the loose sand contained air which more or less livened up the sand when the blow was put upon it quickly. The hand ramming machine, which was shown, was explained to be useful, especially for such deep work as couplers, oil boxes for cars, &c., and details of the machine were shown illustrating the application of various forms of stripping plates to such patterns as require stripping.

The 30 x 48 inch complete machine, which was shown on the screen in detail and in general elevation, Mr. Mumford stated, began work on castings of the nature of covers for journal bearings having dry sand chambered cores and weighing 1000 pounds each. The output on this machine was 12 molds, or 12,000 pounds per day, from a molder and helper. In connection with the work on this machine it was explained that wooden stripping plates were used on some of it, in some cases the stripping plates being clamped to the flasks when lifted from the machine and returned to the machine afterward. The stripping plate and the vibrator are often used simultaneously, sometimes one and sometimes the other. The use of the wooden stripping plates clamped to the flasks and lifted from the machine with them, Mr. Clark at Schenectady has found to save the necessity of bars in the flasks on this large work. To make possible the use of such stripping plates, no change in the machine is necessary, the stripping plate covering the flask frame and pattern plate together. On hand ramming machines for such work as oil boxes, sheet brass stripping plates about 3-16 inch thick are successfully employed, and the speaker said that he had stripped 5 x 9 inch oil boxes on one of the Tabor machines with a sheet of ordinary roofing tin made into a stripping plate for the work in one hours' time.

The discussion which followed the address developed the interest which all foundrymen have in knowing how far machine ramming can go on large work, and Mr. Mumford made it very clear that no builder of power ramming machines would pretend to-day that close spaces between flasks and patterns or deep pockets in the pattern surface, such, for instance, as the pockets in a grate bar, could be rammed by power. This would be possible, he said, if sand could be treated as a fluid, but it cannot, as it moves very little out of the direct line of pressure and its friction on itself and its surroundings is very great. Asked to forecast the future as to the size of work on which molding machines would be used, the speaker stated that his company are now building a power ramming and pattern drawing machine to handle flasks 28 x 70 inches, the two power ramming elements of which each weighed 20,000 pounds, to produce castings weighing from 900 to 1200 pounds each, and that he saw no reason why the radically new principle involved in this new machine should not be applied to castings molded in flasks and weighing as much as 10,000 pounds.

Mr. Mumford was voted the thanks of the association for his interesting address, after which the meeting adjourned, and those present proceeded to the roof garden of the club, where luncheon was served. Impromptu addresses were made by Antonio C. Pessano, E. H. Mumford, Thomas I. Rankin and others.

Standard Pipes and Pipe Threads.

Five years ago the *Locomotive* of Hartford printed an illustrated article on standard sizes of wrought iron pipe for steam, water and gas, and giving the proportions that the threads on such piping should have. The dimensions and proportions for 2, 3, 4, 5 and 6 inch pipe were adopted as standard by the manufacturers of wrought iron pipe and boiler tubes, and also the Manufacturers' Association of Brass and Iron Steam, Gas and Water Works. The following article from a recent issue of the *Locomotive* shows how this standard has been neglected in practice:

But in the shops where the pipe is cut into commercial lengths, in installing new systems of piping or in repairing old ones, the standard proportions of thread are not always followed. This, in fact, is but a very mild and temperate way of stating the case; for we often find that the threads that are cut in such shops are so far from the standard of the fittings that they have to enter that it is impossible to make a good joint in erecting the pipe; and the result is that many lines of pipe that are now running under heavy pressure are in a condition that can be fairly described as positively dangerous. The justice of this statement is abundantly proved by the failures that are constantly occurring at threaded joints; and if further evidence were required a mere inspection of some of the threads that are to be found on pipes that are being made ready in these shops, to go into important work, or that are taken out of such work in the course of repairs, would furnish it abundantly enough to satisfy the most incredulous.

As an example of the kind of thing that may be expected to occur, let us consider a medium size of pipe—say, a 4-inch one. The standard calls for eight perfect threads, then two that are perfect at the bottom and slightly flat on the top, and then four that are imperfect on both the top and the bottom; the total length that is scored by the die on the pipe being 1.80 inches. This is what the standard calls for, as we have said; but when we come to look at the threads that are actually turned out in the shops we find, not uncommonly, that the total length of thread on a 4-inch pipe is only 1.25 inches, and often this is all the thread there is even on a 6-inch pipe, where the standard calls for a total length of 2.01 inches. Now when a pipe is threaded in such a careless manner as that it cannot possibly be made up into a standard fitting to the full number of threads that are

Fig. 1.—4-Inch, 6-Inch and 8-Inch Pipe with Standard Threads.

Fig. 3.—Eight-Inch Pipe Which Could Be Made Up Only Three Threads.

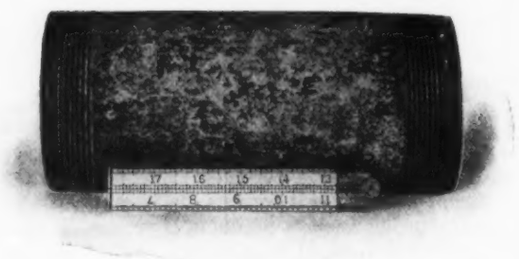


Fig. 2.—Four-Inch Pipe, Standard at One End, but Not at the Other.

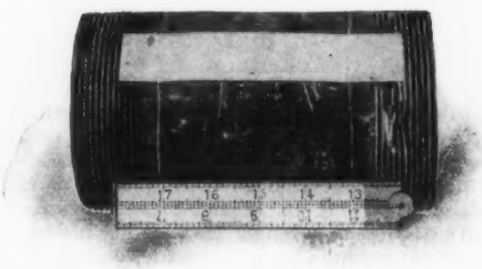


Fig. 4.—Four-Inch Pipe Made Up Only 4½ Threads on One End.

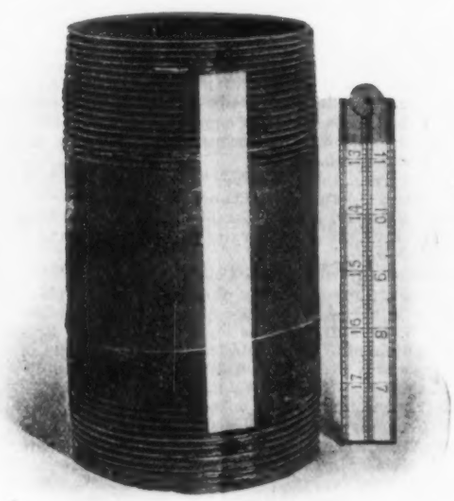


Fig. 5.—Four-Inch Pipe. Thread without Sufficient Taper. Made Up Only Four Threads.

called for in this system, and which are essential in order to secure the requisite strength of the joint; and we regret to say that we are constantly finding pipe connections to boilers made with only two, three or four threads properly made up. We cannot speak too strongly against such a practice, for it shows an indifference to the safety of life and the security of property that is little short of criminal. There is no excuse for it whatever, for it is easy to tell, upon looking at a pipe before the joint is made up, whether the thread upon it conforms to the standard for that size or not; and no pipe ought to be accepted that does not so conform. If a pipe has been threaded short and then made up snug against the fitting it is often difficult to tell, in the finished job, whether it was threaded to standard or not; but the man who puts it in has every chance to inspect it before it is made up, and there can be no excuse whatever for his passing it if it is not right.

In order to illustrate as clearly as possible the points that we are making with regard to piping we present herewith a number of half-tone engravings that were made from photographs, which will show how real are the dangers to which we refer.

Fig. 1 shows the ends of 4-inch, 6-inch and 8-inch pipes, as cut from pipe just received from the mills of

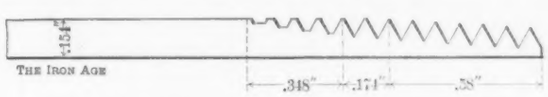


Fig. 6.—Section through 2-Inch Pipe.

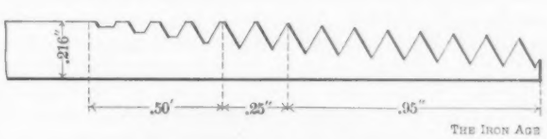


Fig. 7.—Section through 3-Inch Pipe.

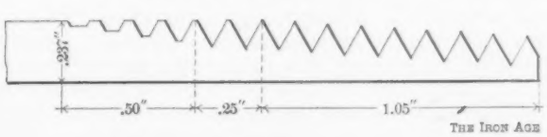


Fig. 8.—Section through 4-Inch Pipe.

over, were not of standard shape. In making up this piece of pipe it had been found impossible to force it into the fitting more than about three threads; and it had been in use for how long or under what pressure we do not know, with only these three threads to take the entire strain.

Other specimens of piping that have done service, while departing materially from the standard, are shown in Figs. 4 and 5. It is almost impossible to preserve in a photo-engraving all the little indications that tell the story to the eye of what the pipe is and how it has been threaded; and to assist the readers somewhat in judging of the character of the threads that we have here shown we have secured slips of paper to the pipes before photographing them, these slips being so adjusted that their ends show the distance to which the various specimens had been made up into their fittings. The case shown in Fig. 5 is perhaps of special interest, because this pipe was threaded at its upper end for a length of 2¼ inches when the standard only calls for a total length of thread, over all, of 1.80 inches; yet, notwithstanding the great length of the thread, it had been found impossible to make the pipe into the fitting to a greater distance than four threads, because the thread was almost perfectly straight and had hardly any sensible taper at all.

When the specimens that we have illustrated are examined at first hand they show almost every kind of a departure from the standard that they are supposed to conform to. Some are threaded too short, some do not have clean threads at all, some have threads that are wrong in shape and some do not have the proper taper.

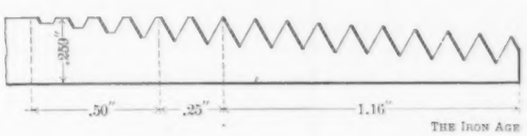


Fig. 9.—Section through 5-Inch Pipe.

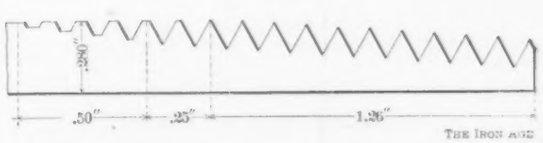


Fig. 10.—Section through 6-Inch Pipe.

STANDARD PIPES AND PIPE THREADS.

the manufacturer. These threads are not absolutely correct, but they are so nearly in conformity with the standard that they would make up all right and give a good job. They are strictly standard, so far as the number and shape of the perfect threads are concerned, and where they depart from the standard they do so only by the omission of a couple of the imperfect threads. The perfect threads, and the two that are slightly flat on top, are correct in each case. We may say that we have not tried to select specimens for any of these illustrations that would represent extreme cases, either of conformity to the standard or of departure from it; because we have thought that it would be much more useful and instructive to take specimens that would fairly represent what would be found in actual practice.

For comparison with what may be expected from the mills we present Figs. 2 and 3, which show specimens of 4-inch and 8-inch pipe respectively, as selected at random from shops where the pipe had just been made ready to go into a new job, or had just been taken out from an old one. As will be evident from the engravings themselves, Figs. 2 and 3 represent pipe that has been taken out. Fig. 2 was threaded correctly on the right hand end, except that some of the imperfect threads were omitted. Otherwise it was standard, at this end, and would make a good joint. At the left hand end, however, it was not standard, but was short by several perfect threads. In the specimen shown in Fig. 3 the threads were not clean and sharp, and, moreThe fact that the specimens that we have shown and described are not extreme cases in any sense, but were selected almost at random from pipe shops, shows how grave this matter is, and we want to say again that we can hardly find words strong enough to express our condemnation of pipe work that is done in any such bungling and reckless fashion. Too much care cannot be exercised in making pipe connections, particularly in steam pipe and boiler work, when failure is liable to cause loss of life. There is no reason whatever why a workman cannot determine at once in fitting up piping whether or not a joint is properly put together and whether or not it is of the strength intended for standard fittings and pipe. Some of the specimens here illustrated show evidence that calking has been resorted to in order to make them tight. This is all wrong, for if the joint is properly made up calking will not be necessary. Calking to obtain tight work is proof of an imperfect joint.

We reproduce, in addition to the half-tone engravings, the diagrams, Figs. 6 to 10, that were used in our earlier article on this subject, to illustrate the correct proportions of standard threads on several common sizes of pipes.

All pipe that is to be used in steam, water and gas fitting should be of standard size, standard thickness and standard thread, and should be round and straight. All fittings should be of heavy gray iron castings, with heavy beads, and with clean, full threads, tapped to

standard gauge; and for high pressure service (100 pounds and over) the fittings should be extra heavy high pressure fittings.

In handling large, heavy pipe the threads sometimes become bruised so as to prevent the proper making up of the joint; and for this reason the precaution of examining both the fitting and the pipe before making the joint should never be neglected. In the best practice a thread guard is used in shipping and handling heavy pipe, and we are glad to say that this practice is now followed by a considerable and increasing number of contractors.

Often in connecting to boilers and tanks no re-enforcing piece is used; and we have often found that the opening in the shell of a boiler, where the blow off is re-enforced, is cut large, so that only the re-enforcing piece is threaded. This is all wrong. To obtain a proper strength or holding power both the re-enforcing piece and the shell should be threaded.

In conclusion, we desire to say a word about what we consider to be a bad practice among manufacturers of pipe. At the present time, when there are so many pipe attachments to boilers carrying full boiler pressure and perhaps subjected to an intense heat also, and endangered often by corrosion, it appears to us just and proper that manufacturers of such pipe should brand their products in the same way that boiler plates are branded, giving the name of the manufacturer, the quality of the material and the pressure to which the pipe has been tested, as a guarantee of good faith. In the present state of affairs we have to take these things on trust, for there is no certain way of demonstrating from what plant a given sample of pipe came unless the plant is known within a limited number of places. In this latter case the character of the marks left by the welding clamps will sometimes serve to determine from which plant it came; but it should not be necessary to trust to such an uncertain and often inapplicable method of identifying the source from which it came. There is nothing unreasonable about this suggestion, and we should think that all well intentioned makers of pipe would be glad to adopt such a plan, in order to protect themselves from unjust suspicion when an inferior piece of pipe, from some less scrupulous maker, comes to light.

Electricity in Iron Works.

In the columns of the *Electrical World and Engineer* C. H. Hines calls attention to the growth of the electrical industry in the operation of the modern iron and steel works. He says:

Taking one plant that I have in mind, which started with a 20 horse-power bipolar T.-H. generator operating one crane a little over seven years ago, the same plant now uses 2000 kw. of power, which does almost the entire work of the plant, save operating the main rolls. Cranes, strippers, tables, blowers, charging cranes, pig casting machines, coal crushers, hoists and the pumps for supply to the boshes of the furnaces are all operated by electric motors, while the ore, coke and limestone with which they are charged are handled by the same means. Among the minor applications are included telephone clocks, time detectors, automatic indicators, magnetic separators; electricity is even in the laboratory for chemical analysis and other operations, while for burning out chilled iron the skill of the electrician is sometimes called into play. And all these appliances are called on to do their work day and night, under the most adverse conditions in many cases; handled largely by unskilled labor and doing work that would cause the average central station man to groan in spirit. Yet with all this they do their work so unfailingly that it is only when an important piece of mechanism stops for a brief period that the necessity of the electrical department is recognized. Moreover, the cost of repairs is far below that which would be required by a steam plant doing the same work.

In the plant that I have mentioned the 2000 kw. of power consists of 10 units, and the 5000 horse-power of motors are in 200 units ranging from ½ to 150 horse-power. Two armature winders keep up all the necessary repairs to the armatures, as well as making up nearly all the coils required for repairs and rewinding.

One important factor which has not yet entered into the operation of these plants is the storage battery, and where the load is always fluctuating, as it is in these cases, they could be most profitably employed. As spare generators are not as frequent as in central stations, their value in the case of a temporary break down of a generating unit would more than compensate for their cost.

A crying need also for these plants is a controller that will stand the constant abuse and reversals to which they are subjected. While many improvements have been made along this line the desired end has not yet been attained, but is, I hope, very near. Another need is a good brush holder adapted to stand the same treatment, for of all the many forms that are now used none is quite satisfactory.

I have found in estimating on the size of motors in connection with this class of work that it is always wise to figure on at least 25 per cent. greater capacity than is actually required, except in the most favorable locations. While by this method the greatest economy is not secured, yet the loss in efficiency is more than compensated for by the decreased danger of burn outs and delays, for in steel works the entire ten commandments of operation are comprised in the words, "Thou shalt not break down or delay production." A shut down of but an hour or so, if it affects the production, such as a deranged crane in the bottom house, means a loss in dollars far in excess of any economy of operation.

In most of the mills of the present day direct current at a voltage of 250 is commonly used. Most of these plants were started in a small way electrically and have constantly been added to, but in the most modern ones that are now building the alternating current has entered the field, and has come to stay. It does all that direct current can do, without the annoyance of commutator trouble, while its flexibility adaps it to all uses. As almost all the works of a steel plant are bunched in a comparatively small area, a low voltage can be used and the bugaboo of greater danger thus removed.

Alternators of a low frequency of about 25 cycles, and ranging from 400 to 600 volts, are best adapted to this class of work, as this permits the use of induction motors without the expense and losses of a cumbersome transformer system; while for the non-inductive load or lighting load, which rarely exceeds 15 per cent. of the total load, motor generators take care of and supply series arc lamps for the lighting.

Another point to be considered is the possibility of utilizing the gases from the furnaces direct in gas engines driving the generators. With the low frequency mentioned there is no reason why, with the present gas engine, this cannot be done with a vast increase of economy of operation.

There are many other lines that might be followed out with profit. Many cranes employed in the handling of sheets of steel and iron and other heavy material could be equipped with portative magnets, thereby saving time and labor. All these things are bound to come in due time; indeed, many of them are even now here, or in the projected plans of new structures, and the day is not far distant when the electrical department of the steel mill will be recognized as its most important feature.

In conclusion, it will not be amiss to say a few words regarding the man whose skill and knowledge are looked to to direct these operations. The position of the chief electrician in steel plans is vastly different from the central station man, or a similar position in other branches of the electrical industry. He must not only understand his routine work thoroughly and have a well grounded technical knowledge, but must also be of an inventive turn of mind, as he is constantly called upon to devise some new method of harnessing the power he controls and must meet the demand promptly, be prepared for any emergency that may arise day or night. In addition to his resourcefulness he must have infinite tact and patience, since the major part of his working force is recruited from unskilled material.

The Production of Iron Ore in 1901.

Summary of Report by John Birkinbine.

WASHINGTON, D. C., May 13, 1902.—The United States Geological Survey has received the annual report upon the production of iron ores in 1901 compiled by John Birkinbine, a summary of which is given below through the courtesy of Dr. David T. Day of the Division of Mineral Resources.

All Records of Production Exceeded.

The total production of iron ore in the United States in 1901 amounted to 28,887,479 long tons. This exceeds the previous yearly maxima of 27,553,161 tons in 1900, 24,683,173 tons in 1899 and 19,433,716 tons in 1898. The increase shown by the figures of 1901 over those of 1900 was 1,334,318 tons, or 5 per cent.; and the gain over the product of 1898 was 9,453,763 tons, or 49 per cent., a phenomenal growth. The largest amounts of iron ores officially reported to date from any other countries are 18,964,294 metric tons, or 18,031,907 long tons, mined in Germany and Luxemburg in 1900, and 18,031,957 long tons mined in Great Britain in 1882.

Twenty-five States and one Territory mined ore in the year 1901, the number of producing States remaining the same as in 1900; but no iron ore was reported as mined from Utah, while South Carolina shipped a sample carload. It is not probable, for the present at least, than any continuous shipments of iron ore will be made from the State last named.

Minnesota Takes First Place.

As in the year 1900 Minnesota contributed the greater portion of the increase for 1901, and advanced to first place as a producer, Michigan, which has uninterruptedly occupied this position since the year 1881, now being second.

The report for 1900 was criticised by persons whose local interest evidently influenced their opinions, because Minnesota was not then given first place. The fact that in 1900 Minnesota shipped more iron ore than Michigan was recorded in the report; but the State of Michigan produced more iron ore in 1900, and it is with production that we have to deal. During the last year increased demands have been made on the Lake Superior region, especially on the Mesaba range of Minnesota; and if the present market rates continue the output from this region will probably be limited more by the facilities for transportation than by the ability of the mines to produce the iron ore desired.

New explorations for standard ores in the Lake Superior district are being actively carried on; and, in addition, some of the siliceous and lower grade ores, of which large quantities exist, are liberally exploited. Both the higher grade ores and also some which are siliceous but low in phosphorus have been shipped and it is probable that in years to come these comparatively low grade ores may become more marketable, unless new sources of ore supply are developed. In the Central West valuable deposits of iron ore in Wyoming, Colorado and New Mexico are being worked extensively to supply the Colorado furnaces. On the Pacific Coast the Irondale Furnace, in Washington, has resumed operations, but its principal reliance has so far been on the magnetite deposits of Texada Island in British Columbia.

Classes of Ore Mined.

In 1901 the red hematite mines contributed 24,006,025 long tons, or 83.11 per cent. of the total for the United States, an increase of 1,297,751 tons, or 6 per cent., over the 1900 total of 22,708,274 tons. Minnesota was the largest producer of this class of ore, followed by Michigan and Alabama.

The total brown hematite ore mined was 3,016,715 tons, or 10.44 per cent. of the output of the country, a decrease of 214,374 tons, or 7 per cent., from the 1900 record of 3,231,089 tons. Virginia and West Virginia combined lead as a brown hematite producer, followed by Alabama and Tennessee.

Of magnetic ores, 1,813,076 tons, or 6.27 per cent. of the United States total, were mined in the year 1901, an advance of 275,525 tons, or 18 per cent., over the 1,537,551 tons in 1900. Pennsylvania was the principal contributor, followed by New Jersey and New York.

But a comparatively small amount, 51,663 tons, of carbonate ore was won in 1901, being 0.18 per cent. of the total iron ore output in that year. Practically all of this came from Ohio, although Maryland, New York and Pennsylvania contributed small amounts.

Lake Superior Region.

The greater part of the iron ore in the United States continues to be supplied by the Lake Superior region, which produced its maximum output of 21,445,903 long tons in 1901, being 74 per cent. of the total quantity reported for the United States. This was an increase of 881,665 tons, or 4 per cent., over the 1900 total of 20,564,238 tons.

From the records of the survey it is evident that in the year 1901 the Mesaba range ranked first, producing 9,303,541 tons, its maximum output. This total has never been reached by any other iron ore region in the world, the Bilbao district in Spain being its closest competitor. In 1901 the Menominee range occupied second place, with a maximum product of 3,679,408 tons. The Marquette range showed a decrease from its maximum production of 3,945,068 tons in 1900 to 3,597,089 tons in 1901. The Gogebic range also declined from its maximum of 3,104,033 tons in 1900 to 3,041,869 tons in 1901. The Vermillion range reached its maximum of 1,805,996 tons in 1901. A sixth range was opened in Canada in the year 1900, the ore being shipped principally to the United States from the port of Michipicoton, in the Province of Ontario. The total output to the close of 1901 amounted to 284,679 tons. It is probable that this range will contribute larger amounts of ore in the future.

The Industry in Several of the States.

Minnesota.—The active iron ore mines of Minnesota, all of which are found on the Mesaba and Vermillion ranges, in 1901 contributed 11,109,537 tons, or 38 per cent. of the total for the United States, giving that State undisputed claim to first place. In fact, with the exception of the German Empire and Great Britain, no country in the world has reached so great a total in any year as the State of Minnesota in 1901, and this phenomenal product exceeded by 3,989,115 tons the production of all the iron ore mines as reported by the tenth census of the United States in 1880, which was 7,120,362 tons.

All of this ore was of the red hematite variety, in which class Minnesota occupied first place with 46 per cent. of the total for the United States. A single mine, the Fayal, produced 1,681,000 tons, or more iron ore than was probably mined in the whole of the United States in any year prior to 1854, and, considered on the basis of metallic content, this output would have produced as much pig iron as was made in the United States in any year up to 1864.

Michigan.—The Michigan mines of the Marquette, Menominee and Gogebic ranges contributed in 1901 a total of 9,654,067 tons, a decrease of 272,660 tons, or 3 per cent., from the 1900 total of 9,926,727 tons. Of this amount the greater part, 9,386,707 tons, was red hematite, in which class the State ranked second; 233,990 tons were magnetite, in which class it occupied fourth position, and the remainder, 33,370 tons, was brown hematite.

The magnitude of the iron ore industry of Michigan may be illustrated by the statement that the output of the mines of this State, in both 1900 and 1901, exceeded the total production of iron ore as reported by the tenth census, 1880.

Wisconsin.—With the exception of a few brown hematite mines and a red hematite deposit in Dodge County, all of the iron mines of Wisconsin are in the Gogebic and Menominee ranges. The total output of the State in 1901 was 738,868 tons, giving it seventh position as a producer. Af this amount 725,496 tons were red hematite, giving it fourth rank in producing this class of ore. The remainder, 13,372 tons, was of the brown hematite variety, in which class the State ranked eleventh.

Alabama.—This State's contribution of iron ore in 1901

was 2,801,732 tons, giving it third position, with nearly 10 per cent. of the total for the United States, being an advance of 42,305 tons over the 1900 output of 2,759,427 tons. Of this amount 2,070,422 tons were red hematite, in which class of ore the State occupied third place, while 731,310 tons of brown hematite gave it second place as a producer of that variety of ore.

Pennsylvania.—This State in 1901 regained fourth place as an iron producer, contributing 1,040,684 tons, an increase of 163,000 tons, or 19 per cent., over the 1900 total of 877,684 tons. All four classes of iron ore were mined, 771,351 tons being of the magnetite variety, 226,699 tons were brown hematite, 42,381 tons were red hematite and 253 tons carbonate, giving the State respectively first, fifth, ninth and fourth places. The greater portion of the iron ore mined in Pennsylvania comes from the Cornwall ore hills, which have been described in previous reports.

Prominent Iron Ore Producers.

During the year ending December 31, 1901, 104 iron ore operations in the United States each produced over 50,000 tons of iron ore. The total for the 104 mines was 25,534,410 tons, or 88.4 per cent. of the production for the country, but a slight advance over the 1900 percentage of 88.3. It is remarkable that in three years, 1899, 1900, 1901, the proportion of iron ore product which has been supplied by the larger operations has borne practically the same relation to the total, showing that these important producers have augmented their output as rapidly as the industry in general has developed. The average per mine, however, advanced from 221,178 tons in 1900 to 245,523 tons in 1901; but the increase from the average production in 1899—242,091 tons—is less marked.

Of these mining operations, 37 are in the State of Michigan, 30 in Minnesota, 10 in Alabama, 5 in Tennessee, 4 in Wisconsin, 3 each in Colorado, New Jersey, New York and Virginia, 2 each in Georgia and Pennsylvania and 1 each in New Mexico and Wyoming.

It will be noted that 71 of the larger producing mines are credited to the Lake Superior region; and in considering the quantities supplied from the mines in this region, it is well to remember that, owing to climatic conditions affecting the transportation, the active exploitation is limited to about seven months. Otherwise, the material won must be stocked during the winter and rehandled during the shipping season.

Value of Iron Ore Mined.

The total value at the mines of the 28,887,479 tons of iron ores produced in the United States in 1901, as reported to this office, was $49,256,245, or a mean of $1.71 per ton, an apparent decrease of 71 cents, or 29 per cent., from the 1900 figures of $2.42 per ton. During the year 1901 there was a considerable decline in the prices of iron ores, the basis value for standard Bessemer ore being quoted at $4.25 per ton, at Cleveland, as against $5.40 per ton in 1900. The highest average value reported in 1901 was $3.18 per ton in Colorado, where the admixture of manganese and precious metals, as well as the cost of labor, added to the estimated value. The lowest average was in Alabama—92 cents per ton.

W. L. C.

Elevators.—The Eaton & Prince Company, 70 to 78 Michigan street, Chicago, have issued an exceptionally handsome catalogue descriptive of the elevators which they are building for both passenger and freight service. The company are builders of elevators exclusively, and have been engaged in this branch of business for 27 years. Their aim during this period has been to establish such a high reputation for their product that in time no further recommendation would be asked for than the name plate of the makers, and to sell them as cheap as that kind of elevator could be sold, allowing for a fair margin of profit. The elevators illustrated in this catalogue comprise a motor of the floor type, direct connected for passenger or freight service, and adapted for high speed, running up to 300 feet per minute, and for any lifting capacity desired; a direct connected motor of the overhead type for either passenger or freight service; a direct connected motor of the ceiling type for freight or passenger service; a direct connected motor for heavy freight service; a single belt electric freight elevator motor; a worm geared belt factory machine; a direct lift hydraulic elevator, such as required for hoisting heavy materials from basements; a center lift hand elevator; an improved corner lift carriage elevator, and a basement or sidewalk elevator. Although the company are thus shown to manufacture hydraulic and hand elevators, their principal product consists of electric elevators. They have brought out specially designed motors for this purpose which can be operated with current from any lighting plant, with variable speed, and under perfect control of the operator. The lever can be reversed as often as desired without fear of injury to the mechanism. The company not only build elevators to meet any requirements whatever, but are also manufacturers of elevator cages and self closing or half automatic elevator gates.

The Billings & Spencer Double Screw Straight Tail Dog.

The Billings & Spencer Company of Hartford, Conn., recognizing the fact that there is much heavy lathe work done on large shafts, rolls, &c., for which special

THE BILLINGS & SPENCER DOUBLE SCREW STRAIGHT TAIL DOG.

engine lathes are used which take exceptionally large chips and coarse feeds, have designed the dog here shown. It has also become a well-known fact that the situation between the makers of tool steel and the makers of engine lathes is parallel to the position occupied by the armor plate manufacturers and the projectile manufacturers. Until recently, the lathe makers have turned out lathes that were stiff enough and heavy enough to do all that the tools could accomplish. There have, however, been recent improvements in lathe tool steel, far surpassing previous practice, and in order to enable manufacturers to use this material to advantage it is becoming necessary for the lathe builders to make heavier and stronger machines. The forged steel dogs are intended for the heaviest work. The 5-inch, shown in the half-tone, weighs 25 pounds, while the 6-inch, made on exactly the same lines, weighs 35 pounds.

The Custom House report for Ashtabula Harbor in April shows that 255,952 tons of iron ore were received and 87,662 tons of coal shipped. Of the ore received 27,135 tons came from the new Canadian ore fields of Michipicoten. Of the coal shipped 7662 tons went to foreign ports. The foreign trade was the largest of any month of April in the history of the port.

Canadian Iron and Steel Developments.

Dominion Iron & Steel Company's Meeting.

A special meeting of the Dominion Iron & Steel Company's shareholders was held at Montreal on the 1st inst. Hon. Robert Mackay presided. James Ross, managing director, reported on the progress of the work at Sydney as follows:

"There are a good many delays, which usually arise in connection with the completion of a plant of this magnitude, and these have limited very considerably our output of pig iron and steel. The principal cause of delay has been connected with our washing plant--that is, the plant for washing the coal for use in the blast furnaces.

"The original intention was that this plant should be capable of washing about one-third of the amount of coal to be used, but we found that it is necessary, in order to obtain good results, that the whole of the coal should be washed before being sent to the blast furnaces. As matters at present stand, we are now able to wash 1000 tons a day, and we expect to steadily increase this to 1600 and 2000 tons a day.

"The blooming mill has been working since it was started most satisfactorily, and all the products made in the open hearth furnace have turned out in excellent condition.

"We have been obliged to make several changes in the original design of the blast furnaces and the alterations in these are now in progress, and we have every reason to believe that these changes will be followed by beneficial results.

"I should like to impress the shareholders with the fact that we are in a position now to say that our fundamental problem has been successfully solved.

"Our ore, our coke and our limestone have all proved to be what was expected of them, and we are now able to make a finished product of the best quality. We are not yet able to say, however, that our plant is being run to its size to obtain the best possible results, that we did not press forward too rapidly with its completion, and have in consequence been unable to turn out our maximum quantity per day. And in this connection it should be borne in mind that the cost of production per ton is conditioned and regulated by the amount of the output, the running expenses, the number of men engaged upon the plant, the cost of maintenance and practically all other expenses amounting to the same whether our plant is turning out 500 tons a day or 1000 tons a day, and we do not expect to get real business results—that is, results showing our earning capacity—until we are turning out our full output.

"The general manager reports that he expects that before the close of the year the plant will have been got into such shape that we will be making steel at a most satisfactory profit.

"In conclusion, I would again repeat that, looking to the fact that we have proved beyond question our ability to make steel of the best quality, we can assure our shareholders that any future difficulties will be only of a temporary character, and that we have every confidence in the ultimate success of the enterprise."

In a few months, he added, the output would be 1000 tons per day. The following resolution was passed:

"That the capital stock of this company, now consisting of 150,000 shares of common stock of the par value of $100 each and 50,000 shares of preferred stock of the par value of $100 each, be and hereby is increased by further issue of 50,000 shares of the par value of $100 each, and that such shares be common shares."

The new stock is to be offered to shareholders of record at $60 per share in the proportion of one share to three.

Making Steel Rails at the Sault.

The steel rail plant at Sault Ste. Marie, Ont., was put in operation during the visit of a number of Toronto capitalists last week.

In the House of Commons the Clergue contract to supply the Canadian Government with 125,000 tons of steel rails was the subject of an inquiry a few days ago. In reply the Minister of Railways and Canals said that the price of the installment of rails to be delivered next year is not yet fixed. He pointed out that Mr. Clergue had encountered difficulties in establishing a plant, which prevented him from delivering the rails last fall as required, and in that sense it might be said he had not defaulted. The purpose for which the contract was entered into, however, was to encourage the establishment of a steel rail plant in Canada. Personally, Mr. Blair said he would not feel called upon to treat the contractor under the circumstances so severely as to cancel the contract. The 15,000 tons of rails purchased elsewhere last year cost $25.79, $24.90 and $25.70 per ton. The price agreed upon with Mr. Clergue for the year's deliveries was $32.50. In reply to further questions Mr. Blair said that Mr. Clergue, having consented to the Government getting 15,000 tons elsewhere, would supply the balance of the first 25,000 tons—viz., 10,000 tons this year--at the price originally agreed upon, $32.50 per ton. For the balance of 100,000 tons the current market prices would be paid. Mr. Blair justified the contract as judicious and in the public interest. Objection was made by some members at Mr. Clergue getting so high a price from the Government which aided him by a bounty of $7 per ton.

Incorporation under the Ontario Companies act has been granted to the Canadian Rolling Stock Company, Limited. The capital is to be $2,000,000. The head office will be at Sault Ste. Marie, Ontario, and the provisional directors are T. C. Leach, Edward V. Douglas, F. H. Clergue, B. J. Clergue and H. C. Hamilton. Cars and locomotives are to be manufactured. C. A. C. J.

Steel Wagon Works at Pueblo.

The Steel Wheel & Wagon Company of Pueblo, Col., announce the completion of their manufacturing plant at Pueblo. The main building is 80 x 300 feet, with a shipping platform 60 feet wide running the whole length of the building, and covered with corrugated metal roof. The building, which is fire proof, is constructed of brick, stone and steel. The steel roof is constructed with 80-foot single spans, leaving the entire interior free from posts or supports. A ventilator, 10 x 16 feet, equipped with pivoted sash extends the whole length of the building 47 feet from the ground. Besides the main building there have been constructed a power house 40 x 50 feet, a wood working pattern and paint shop 40 x 100 feet, and a 25-room boarding house for employees. The latter is lighted by electricity and heated by steam.

The plant is well equipped with modern machine tools, including a 26,000-pound stamping press, drop hammers, punches, shears, hydraulic tire setters, hand and power forges. For expeditious handling of work an overhead trolley and platform car system has been installed. Steam, electricity and compressed air are used for motive power. The plant is capable of turning out 5000 wagons annually, but in addition to steel wagons, the company will build mining and shop cars and barrows, steel rollers, scrapers and some other articles. There is now in preparation a catalogue setting forth the merits and superiority of the Pueblo wagon.

The Pierce Engine Works.

The Pierce Engine Company, Racine, Wis., have prepared plans for some needed improvements at the suburb of Lakeside. Buildings will be erected as follows: One, constructed of brick, two stories, 35 x 200 feet, will be used as a factory and equipped with modern machine tools, which will nearly double the present capacity of the works. About 50 additional skilled mechanics will be given employment as soon as the improvements are completed and before fall the complement of workers will be about 200. There also will be erected a storage building for launches, 40 x 200 feet, and an addition, 60 x 100 feet, to the brass and iron foundry. Minor improvements, such as lumber sheds, &c., will also be built at once.

Within the past year the output of the plant has been doubled, and because of the inability of the com-

pany to fill their orders the further improvements have been decided upon. The Pierce Engine Company have recently been awarded a contract for 28 gasoline launches, 20 feet in length, and equipped with 3 horsepower engines, for use at Coney Island. In addition to the growing domestic trade, the Pierce Engine Company have made rapid strides in foreign trade, having recently received orders of moment from their foreign representative at Rome, Italy. They have also made liberal consignments within the past year to Australia, New Zealand, Russia, South Africa, South and Central America and Mexico. In all the company have manufactured and distributed about 6000 engines.

The American Shipbuilding Industry.

Interesting Report by the Census Bureau.

WASHINGTON, D. C., May 13, 1902.—The Census Bureau has completed the census of the shipbuilding industry in 1900 and is about to publish an elaborate monograph prepared by Alexander R. Smith, acting as expert special agent. In making this compilation, the bureau has been to some pains to avoid duplicating the work annually performed by the Bureau of Navigation of the Treasury Department in collecting tonnage statistics, the major portion of the space being given up to a discussion of industrial conditions and to figures showing the distribution of the shipbuilding plants throughout the country, their relative capitalization, number of employees, materials consumed and value of products. As no statistics of this character have been gathered since the census of 1890, these figures form an interesting basis of comparison, showing the development of the industry during the past decade.

The reports show a capital of $77,362,701 invested in the 1116 establishments reporting for the industry. This sum represents the value of land, buildings, machinery, tools and implements, and the live capital utilized, but does not include the capital stock of any of the corporations. The value of the products is returned at $74,578,158, to produce which involved an outlay of $2,008,537 for salaries of officials, clerks, &c.; $24,839,163 for wages; $3,685,661 for miscellaneous expenses, including rent, taxes, &c., and $33,486,772 for materials used, mill supplies, freight and fuel. It is not to be assumed, however, that the difference between the aggregate of these sums and the value of the products is, in any sense, indicative of the profits in the manufacture of the products during the census year. The census schedule takes no cognizance of the cost of selling, or of interest on capital invested, or of the mercantile losses incurred in the business, or of depreciation in plant. This statement is necessary in order to avoid erroneous conclusions from the figures presented.

Substitution of Iron and Steel for Wood.

Of the total number of establishments returned, 44 are reported as devoted exclusively to the construction of iron and steel vessels, and these are credited with a total capitalization of $59,839,555 and with products valued at $50,367,739 to produce, which involved an outlay of $1,411,863 for salaries of officials, clerks, &c.; $16,231,311 for wages; $2,642,690 for miscellaneous expenses, and $23,585,549 for cost of all materials used. Referring to the superseding of wood by iron and steel as the principal materials for vessel construction in the United States, the report says:

"The growth of the shipbuilding industry in the United States during the past ten years, as shown by the census reports, exceeds that of any preceding decade, and the tonnage constructed during the census year ending May 31, 1900, was greater than during any preceding year in the history of the United States, with the possible exceptions of 1854 and 1855. Although in other countries iron and steel long ago largely superseded wood as the chief material used in the construction of ships, the census statistics show that it was not until the last decade that metal shipbuilding attained proportions greater than wooden in the private shipyards of the United States. This substitution of iron and steel for wood has brought a revolution in the shipbuilding industry in the United States."

Ships Built Almost Entirely for Domestic Commerce.

The fact is emphasized in the report that the product of merchant vessels has been almost entirely absorbed in the domestic commerce of the country, and the completeness of the decline of American shipping in the foreign trade is illustrated by some interesting statistics. In 1826 American vessels carried 92.5 per cent. of the foreign commerce of the United States, the value of which was $150,331,636, while in 1900 they carried 9.3 per cent., the value of which was $195,083,155, an increase in value of only 29.5 per cent. in 74 years. In 1826 foreign vessels carried 7.5 per cent. of our foreign commerce, valued at $12,238,163, while in 1900 they carried 90.7 per cent., valued at $1,894,445,461, an increase of 15,379.8 per cent. in 74 years.

"In view of expert official estimates," continues the report, "it would be conservative to state that fully 5,000,000 tons of shipping are now required for the carriage of our entire foreign commerce. Toward supplying that need, home shipyards contributed only 29,069 tons during the census year of 1900, and only 206,771 tons during the entire ten years ending with 1900. At the rate of construction in 1900 172 years would elapse before enough tonnage would be built for the present needs of our foreign trade. The average life of a ship is commonly computed at ten years, taking into account losses, accidents and deterioration. But allowing 20 years as the average life of a modern steel steamship, at the present rate of construction for foreign trade, over eight years would elapse before enough ships would be constructed to provide for the average losses of one year.

Recent Shrinkage in Tonnage in Foreign Trade.

"In 1900 the American tonnage under register in our foreign trade amounted to 946,695 tons, since which time 206,771 tons have been built in the United States and documented under register, and 134,859 tons of foreign built vessels have been granted American registry. This would have made a total of 1,288,325 tons in 1900 had none gone out of existence. But in 1900 the tonnage under American registry was only 826,694, showing a loss of 461,631 tons during the ten years. This shrinkage is more than twice as much as the total new registered tonnage built in the United States during the decade. This indicates how hopeless, under present conditions, are the prospects of the shipyards of the United States maintaining even the present tonnage in the foreign carrying trade, to say nothing of providing the additional tonnage made necessary by the growth in volume of foreign commerce."

Statistics for 1890 and 1900.

The following table shows the statistics for the entire shipbuilding industry, exclusive of establishments owned by the Government, for the two census years 1890 and 1900:

	1890.	1900.
Number of establishments	1,006	1,116
Capital	$27,262,892	$77,362,701
Salaried officials, clerks, &c., number.	1,123	1,407
Salaries	$1,194,870	$2,008,537
Wage earners, average number	22,143	46,781
Total wages	$13,083,949	$24,839,163
Miscellaneous expenses	1,392,551	3,685,661
Value of products, including repairing.	38,065,410	74,578,158

The Government establishments are reported as numbering nine, with a total capital employed of $54,291,011, with 7690 wage earners receiving $6,222,263 in wages, using materials to the value of $3,805,326 and turning out a product valued at $11,034,312. These establishments include the Government navy yards at Kittery, Maine; Boston (Charlestown), Mass.; Brooklyn, N. Y.; Philadelphia (League Island), Pa.; Norfolk, Va.; Port Royal, S. C.; Vallejo (Mare Island), Cal., and Bremerton (Puget Sound), Wash., and an establishment under the supervision of the State of Illinois, engaged in the repair of canal boats, locks, gates, &c., at Lockport, Ill.

"The large capital invested in the governmental shipbuilding establishments," says the report, "indicates the costliness of such modern equipment, and explains, in a measure, the enormous investment necessary in pri-

vate yards to enable them to successfully engage in the construction of modern ships of war. The average capital invested in the eight navy yards is $6,785,064. This exceeds the total capital invested in shipbuilding in the United States in 1850 by $1,411,925."

"The following table presents a comparative summary of the establishments engaged in iron and steel shipbuilding in 1890 and 1900:

	1890.	1900.
Number of establishments	18	44
Capital	$10,712,023	$59,839,555
Salaried officials, clerks, &c., number.	138	857
Salaries	$291,105	$1,411,863
Wage earners, average number	8,165	30,906
Total wages	$4,883,665	$16,231,311
Miscellaneous expenses	$546,135	$2,642,690
Cost of materials used	$6,256,905	$23,585,549
Value of products, including repairing.	$13,012,266	$50,367,739
Number of vessels built	88	134
Gross tonnage	123,073	262,516
Net tonnage	.....	186,509
Value of vessels built	$11,550,846	$25,454,943

"This table discloses a remarkable growth in the number of establishments, capital invested, wage earners employed, wages paid, cost of materials and value of products. The statistics indicate not only that this branch of the industry increased largely in all the essential items of information, but that the individual establishments have enlarged their productive capacity by investments in improved machinery equipment and by extensions of their plants. The increase in the capital invested in the iron and steel branch of the industry for the decade ending with 1900 was $49,127,532, or 458.6 per cent. The capital in the whole industry increased only $50,099,809, or 183.8 per cent., which indicates what an insignificant increase was made in this respect in the wooden shipbuilding branch. The increase in the value of shipbuilding products in both branches of the industry from 1890 to 1900 was $36,512,748, or 95.9 per cent. The increase in the value of iron and steel shipbuilding products alone was $37,355,473. Wooden shipbuilding, therefore, suffered an actual decrease."

Cost of Materials and Value of Product.

Interesting statistics gathered by the Census Bureau show the quantity and cost of the principal materials used in the construction of iron and steel vessels during the census year and the number and value of vessels of all kinds built, as well as the amount received for repair work. From these figures it appears that the industry consumed 22,639 tons of pig and scrap iron, costing $395,091; 375,383,913 pounds of iron and steel plates, beams, angles, forgings, bolts, spikes, rivets, girders, castings, &c., costing $11,878,297; anchors and chains to the value of $168,726; 633,175 feet of wire cordage, costing $72,791; 973,283 pounds of manila and hemp cordage, costing $142,138; 267,953 feet of lumber of all kinds, costing $1,341,113, and other materials to the value of $9,587,393, making a total of materials consumed of $23,585,545.

The products included 123 vessels of 273,379 gross tons, or 164,313 net tons, and a value of $24,311,343; six sailing vessels of 21,085 gross tons, or 18,348 net tons, having a value of $962,600; five barges of 4052 gross tons, or 3848 net tons, having a value of $181,000, and other products to the value of $12,609,836. In addition there was received for repair work by these establishments $12,302,960, making an aggregate of $50,367,139.

W. L. C.

Gas Engines.—The Charter Gas Engine Company, Sterling, Ill., have issued a small illustrated catalogue of engines, pumps and pumping attachments of their manufacture. The illustrations of the Charter gas and gasoline engines, both horizontal and vertical, and of the Sterling gasoline portable engine are especially clear. Little space is left for descriptive matter, but all that is essential for those desiring to place orders is given. The Charter is stated to be "the pioneer in the gas engine field, being the first engine to successfully use gasoline as fuel in the United States." The manufacturers claim that it is extremely simple, most reliable, economical and substantial, with an unbroken record of safety from fire or from explosion.

Notes from Great Britain.

The Science and Politics of Commerce in Great Britain.

LONDON, May 3, 1902.—The advent of the American financier in Great Britain has led to much animated discussion among responsible commercial statesmen and much inquiry into the state of the British commercial soul. A feeling of uneasiness prevails, which has found expression in debates in Parliament, heavy newspaper correspondence, discussions in the railway trains and much else. With John Pierpont Morgan skilfully annexing the Atlantic liners, so long the pride of the average Englishman, and C. T. Yerkes boring holes through London north, south, east and west, with the mastery of the iron and steel industry now secured in America, it is after all but little wonder that Englishmen should at length shake themselves from sleep and try to accommodate themselves to the new conditions. Yet it would be wrong to assume that the English business man is not trying in his own practical way to solve the problems which confront him on every side. No one can have better opportunities of noting movements in the world's market than the Englishman, if he but have eyes to see. Great Britain is still master of the world's maritime; orders, indents and contracts fly from the world's circumference to the London center as they did of yore; but somehow, in a way Englishmen cannot quite understand, the Americans and Germans are securing a firm grip upon markets of which Great Britain formerly had complete possession. It may be well to inquire, then, what is being done in Great Britain to teach young men the newer methods and to take a bird's-eye view of present day British commercial politics.

It has for a long time been urged that Great Britain is behind other countries in her technical education and technological institutes generally. Personally, I do not think that this is nearly so true as innumerable newspapers would have us believe. There is practically no large commercial center in England without its technical school, and very thorough and well organized many of them are. The root of the difficulty lies deeper. Technical education is, after all, but a tiny rung in the ladder which leads to efficiency in the wider commercial issues. What is wanted is not so much elementary technical education, as a higher education of university grade, the curricula of which are adapted to the economic needs of the country.

The London School of Economics and Political Science,

which has now been affiliated with the University of London, is a very important step in the right direction. When it was founded in 1895, the absence of any system of commercial education of a university type and of scientific training in public administration central and local, had led to many complaints. The underlying idea of the school is a system of higher education especially adapted to the needs of the captains of industry and commerce, in which is provided a scientific training in the structure and organization of modern industry and commerce, and the general causes and criteria of prosperity as illustrated or explained in the policy and experience of Great Britain and foreign countries. The school is not an exact copy of any foreign institution, for the very simple reason that conditions in England are different. The school's programme has been arranged with a view to the needs of particular callings. At the present time it has to discharge the functions of an important center of teaching, investigation and research, a great library and a central office at which British and foreign students and inquirers can obtain information.

Since the school was opened more than 1400 students have entered on the books. For the session 1899-1900 the number was 435. Of these 70 per cent. were drawn from the professional and business classes. The British colonies and the United States of America also supply a certain number of students, while about 25 per cent. of the total number are graduates of British or foreign universities, among which I notice the names

of Harvard, Yale and Columbia. Toward the cost of carrying on the work, the Technical Education Board of the London County Council has allotted $12,500 a year. While the income of the school is now sufficient to maintain it in its present efficiency, it is felt by those responsible that, with additional money, developments in all directions could take place with advantage to the whole of the community. Passmore Edwards, well known on this side of the water for donations of free library buildings (in which, by the way, he quite overtops Andrew Carnegie), has recently contributed a sum of $50,000 for housing the school. This is, in fact, the first new university building in connection with London. It is situated in Clare Market, near the Courts of Justice.

In addition to the London School of Economics, the new University of Birmingham has also started a Commercial Faculty, the first professor of which is Professor Ashley, who was, if my memory serves me, for some time connected with Harvard. This faculty, however, is not capable of much development at present, owing to the want of funds. On the whole, it may therefore be said that the London School of Economics supplies that higher technical training which, in my opinion, is requisite and indeed urgent to-day.

England Relying Upon Government Effort.

It is, of course, the duty of commercial students to watch carefully commercial politics. Let me glance rapidly over this interesting section of the subject. The first point that strikes me is a comparison between Great Britain and America. In America the great changes in industry, if not actually brought about by powerful men, have been at least identified with their names. Pierpont Morgan, Carnegie, Schwab, are regarded in England as the very incarnations of the new American commercial spirit. It is recognized that in England we have no men who so completely dominate any particular industry as do these prominent Americans. Just as associated effort in America relies upon the skillful diplomacy of men moving in a purely voluntary circle, in England the movement is toward greater and greater reliance upon state effort. Ten years ago the chambers of commerce up and down the country never called upon Parliament to do anything except in the last resort. An examination of their more recent conferences now proves conclusively that they first think of calling for state assistance. It would be easy to fill a page of *The Iron Age* with resolutions dealing with a wide variety of commercial topics, but all indicating precisely this tendency—namely, to rely upon government for the very things which only a few years ago business men would have considered ought to be obtained by purely voluntary effort.

This growing dependence upon state regulation is, I doubt not, a necessity inherent to the conditions of British national life; but it has its drawbacks. Parliament does not necessarily legislate in the interests of the purely commercial classes. Political issues come into play, with the result that often state legislation retards commercial development. This is notably the case in regard to the growth of electrical undertakings. The political power of the municipalities is an important factor to be reckoned with. Broadly, on all matters of water, gas, transit and electrical power, they claim a monopoly within their own areas. The city corporation, however, has to consider the ratepayers, and the ratepayers are not always amenable to heavy capital expenditure upon new industries. The result has been a distinct crippling of the electrical industry. A committee appointed by the Institution of Electrical Engineers, consisting of prominent experts, has recently been sitting to take evidence upon the whole question. Their report has now been issued. Their united opinion is to the effect that, while Englishmen have been among the first in inventive genius in electrical science, its development in the United Kingdom is in a backward condition, as compared with other countries; that the cause of such backwardness is especially due to the restrictive character of the legislation governing the initiation and development of electric power and traction undertakings and the powers of obstruction granted to local authorities.

The Edison Ore Concentrating Process.

The prospectus of the Dunderland Iron Ore Company, Limited, with a share capital of £2,000,000 (200,000 6 per cent. cumulative preference and participating shares of £5 each and 200,000 ordinary shares of £5 each), has been issued. The company are to work the Edison magnetic process upon extensive deposits of ore in Norway which are to be acquired. These ore deposits are situated on the west coast of Norway, at distances varying from 3 to 35 English miles from the port of Mo on the Renan Fjord, which is practicable for ships of large draft. A thorough examination has been made of three groups of these deposits by means of trenching, boring, &c., and from 75,000,000 to 80,000,000 tons of crude ore have been found available for quarrying. In addition it is believed that the deposits not yet proved contain at least another 100,000,000 tons of ore. It is stated that there is available on the property to be acquired by the company water power sufficient to work a plant three or four times larger than the steam plant now to be erected, and land amply sufficient for the construction of a railway between the port and the mines and for the necessary quarries, mills, &c. The railroad has already been surveyed and can be rapidly constructed. The climate permits of work being carried on in all ordinary seasons without serious interruption, while labor is cheap and easily obtainable. Colonel Turretini, designer of the water power installations at Niagara and Geneva, estimates the power available at 40,000 horsepower. It is proposed, in the first instance, to erect a plant designed by Mr. Edison to concentrate 1,500,000 tons of crude ore and produce 750,000 tons of briquettes per annum. It is estimated that the normal cost of production from the quarrying of the ore to the placing of the briquettes on board ship will be 8 shillings per ton as a maximum, and it is considered that the cost of freight from Norway to the northern ports of England should not ordinarily exceed 4 shillings 6 pence per ton. At the present prices of iron ore it is further estimated that briquettes containing 65 per cent. of metallic ore and less than 0.03 per cent. of phosphorus will be worth, ex-ship in Great Britain, about 21 shillings per ton. Taking the cost of production and freight at 12 shillings 6 pence per ton, and the value of briquettes at 20 shillings per ton, an annual profit is estimated of £281,250 as soon as the estimated output of 750,000 tons is obtained, subject to paying the Norwegian Government the nominal royalty of 0.03 kroner (rather less than 1 cent) per ton of crude ore worked. Among the directors of the new concern may be noted Sir David Dale, past president of the Iron and Steel Institute; Joseph Lawrence, M.P., director of the British Westinghouse Company; William Watson-Armstrong, director of Sir W. G. Armstrong, Whitworth & Co., Limited; George Ainsworth, general works manager of the Consett Iron Company; Edward Windsor Richards, past president of the Iron and Steel Institute and director of Guest, Keen & Nettlefolds, Limited. It is needless to remark that the issue of this prospectus is creating considerable interest.

Profits in Locomotive Building.

Beyer, Peacock & Co., the well-known locomotive builders, have been floated as a limited liability concern, with a share capital of £500,000 and £300,000 4¼ per cent. debenture stock. This business was established in 1854, and in 1883 the surviving partners formed it into a private limited company. It may be interesting to American locomotive builders to observe the profits made by this firm during the past few years. They show an annual average of £63,029 6s. 9d., as follows:

Year ended December 31—			
1896	£54,025	2	2
1897	53,887	6	11
1898	67,251	14	2
1899	42,228	4	2
1900	62,024	16	9
1901	98,758	16	5

Russian Machine Builders.

A convention of Russian machine builders lately met at Kharkof and adopted a resolution to form a union of all machine building works in Russia. It is proposed to divide all the works into 18 groups according to the kind of machines they produce, and the orders are to be

justly divided between the various works of the union in order of capacity. A petition to the Government has been agreed upon in the following terms:

1. The revision of the tariff concerning machines, this revision to be made with the aid of specialists. 2. The introduction of the more detailed tariff. 3. Strict application of the imperial ukase (order) to give all Government orders for machines to Russian works. 4. Large credit to machine builders warranted by raw materials and unfinished product. 5. Specialization of factories. 6. Institution of the Bureau of Statistics. Petitions will also be presented for the equalization of the duty on locomobiles and on all agricultural machines, with the exception of those not yet manufactured in Russia.

British Iron and Steel in the Netherlands.

A report from the British consul at Amsterdam upon the present position of British trade in the Netherlands in iron and steel is to hand. The gradual exclusion of British iron and steel excites some comments which are worth noting. In the opinion of the consul there are two principal difficulties to be overcome if the British manufacturer is to regain his lost footing in the Netherlands. The first is the more universal adoption in this country of the system of "standardization," which has made such progress in Germany and Belgium in nearly all iron and steel manufactures. This is a difficulty which it ought not to be impossible to meet. The second difficulty, and a much more serious obstacle, is the existence of trusts or syndicates in almost every principal branch of the iron trade in both Germany and Belgium. The principle upon which these powerful combinations work is that of keeping prices on a high level at home, while making the most extensive and serious sacrifices for export orders. In the present depressed condition of iron manufactures in the above-mentioned countries, these sacrifices have gradually reached a figure at which British competition seems next to impossible. In concluding his report the consul again records his strong opinion in favor of the compulsory adoption of the metrical system by Great Britain. S. G. H.

Central Pennsylvania News.

HARRISBURG, PA., May 12, 1902.—Between scarcity of men and material and differences over wage scales some of the works of central Pennsylvania have been sorely harassed within the last ten days. No less than six of the largest puddling works in the lower Susquehanna Valley were closed last week because of strikes, the men demanding a $4.50 per ton rate, which is higher than paid in this part of the State in a generation.

This city, however, has escaped labor troubles this year, and both of the large puddle mills and several smaller works are going ahead on full time, two increases having been granted this last winter. The opening of the farming season threatens to cause more or less trouble. Hundreds of men annually leave their employment in the cities and towns to go to farms. Already labor is so scarce that some mills are unable to keep a full force at work.

Through the efforts of the Williamsport Board of Trade the new works of the Steel & Robinson Company will be located at that city, the plans calling for an extensive plant.

The April output at the works of the Pennsylvania Steel Company at Steelton was in excess of that in any month this year. Large products were made by the steel departments, the open hearth tonnage being greater than for months. The number of men has been increased about 70 to 100 per week for the last six months, and 9000 will be employed in the plant by the end of summer if the present rate of adding new names keeps up.

York works have escaped labor troubles so far and shipments have been large, the various agricultural works being engaged on orders which are larger than for years. It is significant that a good proportion of these orders is for export, South America being a large customer.

The Harrisburg Mfg. & Boiler Company are engaged on an order for pipe for export to Spain, where it will be used in a large water system. This is the first order for a Spanish port to come to this part of the State since the war. This company have been hampered by lack of material in its boiler trade.

R. C. Neal, who recently bought the Hollidaysburg Iron Works in Blair County, is taking steps to put them into operation at an early day. The force of men employed will be increased. The mill will manufacture skelp and bar iron.

Steps are being taken to form a company to operate one of the idle charcoal furnaces in the Cumberland Valley. Several residents of this city are interested and an inspection will be made of two of the stacks considered as available. The project has been talked over considerably within the last year, and if arrangements can be made the company will be formed. There is an abundance of ore and wood in the valley region in which furnaces have been operated since the Revolutionary War.

The Marietta Enameling Works, at Marietta; the Norristown Iron Works and the Alan Wood Company, at Conshohocken, have given employees increases of wages since the first of the month.

Operations are to be started in the new works of the Abram Cox Stove Company, at Lansdale. This stove works has been in course of erection for some time and is one of the model plants of its kind in the eastern part of the State.

Officials of the Lalance & Grosjean Mfg. Company paid a visit to their tin plate works here this week, and it is reported that a number of improvements are contemplated. An open hearth steel plant has been talked of as one of the new departments.

Capital Stocks Increased $3,908,000.

During the month of April there was a remarkable increase in the capital stock of many of the corporations in Pennsylvania, a number of them making great advances in their capital for the purpose of extensions, improvements and working capital. The increase reached several millions, that of the companies engaged in the manufacture of iron and steel in various forms alone being $3,908,000.

The increases filed at the State Capitol include: The Hussey-Binns Shovel Company, Pittsburgh, from $1000 to $1,250,000; Lebanon Iron & Steel Company, Lebanon, from $1000 to $550,000; Pittsburgh Malleable Iron Company, Pittsburgh, from $25,000 to $300,000; John Eichleay, Jr., Structural Steel Company, Pittsburgh, from $1000 to $100,000; Monongahela Foundry & Forge Company, Pittsburgh, from $1000 to $50,000; Pittsburgh Construction & Engineering Company, Pittsburgh, from $20,000 to $50,000; Carbondale Metal Working Company, Carbondale, from $35,000 to $75,000; Petroleum Iron Works Company, Washington, from $50,000 to $150,000; Franklin Mfg. Company, Franklin, from $30,000 to $150,000; American Gas Construction & Mfg. Company, Pittsburgh, from $1000 to $600,000; Link-Belt Engineering Company, Philadelphia, from $300,000 to $350,000; Superior Steel Company, Pittsburgh, from $100,000 to $500,000; American Foundry & Construction Company, Pittsburgh, from $1000 to $150,000; Burns Uniform Steel & Metallic Company, Pittsburgh, from $1000 to $200,000; Landis Tool Company, Waynesboro, from $100,000 to $150,000; Kutztown Foundry & Machine Company, Kutztown, from $50,000 to $100,000. S.

Springs.—"Springs" is the title of a neat and attractive catalogue issued by the American Steel & Wire Company. The catalogue is known as No. 5, and contains several new features. The company call attention to the fact that with more complete equipment than ever in the factories at Worcester, Mass.; Waukegan, Ill., and San Francisco, Cal.—which are the largest spring factories in America—they are able to supply all patrons to great advantage. The catalogue is re-enforced by a number of tables of value to the trade, among them being the tensile strength of wire; comparison of gauges, showing gauge number equivalents in decimals; decimal and millimeter equivalents to fractions of an inch. A table of contents for ready reference is given in the back, preceded by a list of the products of the company.

The Iron Age

New York, Thursday, May 15, 1902.

DAVID WILLIAMS COMPANY, - - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - - EDITOR.
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RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - - - BUSINESS MANAGER.

The Iron Age Directory.

In the course of the week subscribers of *The Iron Age* will receive a copy of THE IRON AGE DIRECTORY, a neat volume of 250 pages, which we trust will prove of value to them. The DIRECTORY is a classified index of the goods manufactured by the 1355 advertisers in *The Iron Age*. Since they represent the leading producers in every branch of the iron, metal, machinery and hardware industries, the DIRECTORY furnishes a list of the most enterprising makers. How varied and extensive is the compilation may be judged from the fact that it deals with 4700 distinct articles. The DIRECTORY will be of great service for an additional reason: It enumerates fully the many special articles which never find their way into any published lists. We know from the daily correspondence which reaches this office how widespread is the demand for information of this character and from our own efforts to supply it how perplexing is the search for it.

We commend the little volume, in its improved form, to the subscribers of *The Iron Age*, feeling convinced that it will prove a valuable aid to them in conducting their business.

The Crop Outlook.

Unseasonably low temperatures throughout the West, with rain and snow in the Northwest, especially dubious reports from the Red River Valley during the week, have in large measure offset the effect of the favorable conditions reported during the week previous and have been taken as evidence supporting the belief of a reduced wheat acreage. But while spring wheat seeding in the extreme North has been further retarded, and the outlook is less encouraging, the situation cannot be regarded as unusually unfavorable, considering the time of year. In the southern portion of the spring wheat belt the early sown seed is reported to have germinated well and is now in good condition, although temporarily growing with less vigor. The very general improvement noted in the condition of winter wheat by the Weather Bureau several days ago has been followed by less encouraging reports and, notwithstanding the fall of needed rain, there is more or less solicitude concerning the crop in important sections of Nebraska, Kansas and Texas. Indeed, in portions of the latter two States a considerable acreage will be plowed and sown to other crops. On the Pacific Slope, while the crop is backward, the condition is generally promising.

As a rule, corn planting has made favorable progress in the States of the central valleys, although retarded in portions of Iowa, Missouri and in the more Northern States. The early planted corn has germinated well, a good start being secured. Some planting is reported to have been done even in South Dakota and Michigan. With more seasonable temperature, now confidently expected, planting will proceed rapidly in the northern portions of the corn belt, where the soil is in fine condition. In the South favorable progress has been made, but rain is needed in the Southeast.

Pastures and meadows are doing well in Indiana, but are still below the average in Iowa. The central valleys, Middle Atlantic States and New England report improvement. The hay prospect west of the Mississippi is not encouraging, but better returns are made concerning the crop in the East.

Generally considered, oats have made very favorable progress and seeding is about finished in the more northerly sections, but from Nebraska, Texas and portions of Missouri and Alabama the news is of a discouraging nature.

The early planted cotton has secured a good stand and is in a good state of cultivation, but the late planted, especially in the central and eastern portions of the cotton section, is coming up irregularly. Some replanting has been made necessary in Texas by high winds and drifting soil. Planting in the northern portions of the belt is about completed.

Concerning tobacco, the bureau reports the plants, except in North Carolina and Kentucky, plentiful and healthful, although late. In Florida and North Carolina transplanting has been delayed by the backwardness of the season.

The Minority Report on the Fowler Currency Bill.

The report in favor of the currency bill argues in favor of the safety of an asset currency by citing the statistics of failed national banks, and showing how small a guarantee fund would have covered every loss. In their adverse report the minority of the committee say that no inference regarding the proposed system of banking can be drawn from experience with the present system. This point may or may not be well taken; it is needless to discuss it because the experience of Canadian banks at the present time, and the experience of State banks in New York and New England, and also in other parts of the country, before the Civil War, support the pending bill and the ample security afforded by the general assets. The minority object that the bill would make the volume of the currency depend upon the borrowers and that this is unsafe. But the bill limits the circulation to 60 per cent., and in emergencies 80 per cent., of the bank capital, and every bank will lose if it lends money to men who cannot take up their notes. They will be bound to exercise caution in their own protection.

The report of the majority having argued that deposits are just as much of a liability as circulating notes, the minority report attempts to deduce a general law that where there are large accumulations of wealth the deposits are large, and in other countries the note circulation is large. But there is no such general law and the difference is due to difference in business habits in the common use of bank checks. The statistics of the majority report show that in Scotland the deposits are about 13 times as great as the circulation, and in England about 20 times, while the banks of France and Germany had circulations much in excess of their deposits. All are countries of large accumulated wealth, but the check is in more common use in England, Scotland, Canada and the United States than on the Continent of Europe.

The minority report protests strenuously against branch banking on the ground that it would drive the local banks out of business and create a monopoly, and also that the branch banks would not serve local needs because their stockholders would have no knowledge of, or interest in, local conditions. But it is quite evident that the branch banks could not exterminate the

local banks except by furnishing the local community with credit on better terms than the local bank did. The minority say that "in every country where a branch bank system prevails there is a monopoly in banking." Monopoly is a word used in politics with no defined meaning; there are many banks in all European countries; there is competition in banking capital; in England there are very few branches of the Bank of England; it is the great joint stock private banks that have branches all over the country. The minority point triumphantly to stationary bank capital in Canada and exclaim, "No growth! No development! Monopoly!" But the banking capital of Canada is $12 or $13 per capita, and the capital of national banks in the United States is only a little over $8 per capita; the capital of all national and all State banks put together is less than $12 per head of population. The fact is that the banking system of Canada is more favorable to the investment of money than our system is. We are just catching up with the Canadian scale of investment in banking capital. The minority do not mention about $37,000,000 of surplus employed by Canadian banks.

That branch banking would lower the rate of interest in remote parts of the country the minority report says: "We have no assurance. It is only supposition and at most an expectancy." But it is a fact, sustained by the experience of England, France, Germany, Scotland, Canada and Australia, and of other countries also, for of all nations we alone restrict branch banking, and here the farmer and the country merchant are at a greater relative disadvantage in obtaining credit than anywhere else. The evidence of this is briefly summarized in the report of the majority.

The minority also has no confidence in the redemption scheme proposed by the bill, but it is very much the same plan that is working efficiently in Canada and that gave its great success to the "Suffolk Bank System" of New England about half a century ago.

One may doubt the wisdom of having a board of three commissioners, instead of one Comptroller of the Currency, and fail to see why the term of office should be 12 years, but it is substantially correct to say that the majority support their bill by appeals to experience, our own and that of foreign nations, and the minority express much of that distrust of financial institutions and unfamiliarity with financial history with which many years of greenback and free silver agitation have familiarized us.

Blast Furnaces Building in the United States.

With the current scarcity of pig iron much attention is being given to the possible relief which is to come through the entry into the market of new stacks. The following data bearing on the work now being done may be of service in this connection:

Joseph Wharton of Philadelphia has begun the erection of a third blast furnace at Port Oram, N. J. It is doubtful whether this stack will make any iron in 1902.

The Rochester & Pittsburgh Coal & Iron Company are building a furnace near Punxsutawney.

In the South the Searles Furnace of the La Follette Coal, Iron & Railroad Company, at La Follette, Tenn., will blow in their new furnace during the next few weeks. It will have a capacity of 100,000 tons per annum.

The new Pioneer Furnace of the Republic Iron & Steel Company, at Birmingham, Ala., has been started lately. It is a splendid plant and is expected to produce 100,000 tons per annum.

The Central Iron & Coal Company are building a coke stack at Tuscaloosa, Ala.

The Woodward Iron Company of Woodward, Ala., and the Alabama Steel & Wire Company of Ensley are each to erect a furnace, but, of course, none of the pig iron which they will make will be available this year. The Woodstock Iron Company of Woodstock, Ala., are practically rebuilding one of their stacks, which will in reality be equivalent to a new producer. Low Moor, in Virginia, may also build.

At Buffalo, N. Y., the Lackawanna Steel Company have moved their Scranton furnace plant. These two smaller furnaces will probably make iron this year. Work has begun on two large modern entirely new furnaces, to be followed later by two more; but the two large ones now under way will not contribute to the pig iron output this year.

Close to the Lackawanna works there are to be erected by the Goodyear-Brown interests two modern furnaces, which are to serve the foundry trade. The title of the new concern is the Buffalo & Susquehanna Iron Company, who will not produce until the end of 1903.

Other new furnace plants on the shores of Lake Erie are the furnace at Toledo, the new stack at Detroit and the blast furnace to be built by the recently organized Cleveland Company. None of these five stacks will make iron before 1903. In Chicago the South Chicago Furnace Company will soon begin the erection of an additional blast furnace.

In the Central West the St. Clair Furnace Company are building three furnaces at Clairton, Pa. One stack will probably be ready in November or December, 1902, and the other two in the early part of 1903. The daily capacity will be 500 tons for each furnace.

The Union Steel Company of Pittsburgh are building two blast furnaces at Donora, Pa. It is not likely that these furnaces will make any iron before January, 1903, and probably later. Ground, railroad tracks, pump houses, &c., are being prepared for the erection of four furnaces of 500 tons each. As soon as the first two are finished the work of building the other two will be started at once.

The Sharon Steel Company are adding two furnaces at Sharon, Pa., to make from 350 to 400 tons each. These furnaces will not make any iron before the early part of 1903.

The La Belle Iron Works are rebuilding their La Belle Furnace at Steubenville, Ohio. The new stack will make from 400 to 450 tons per day. It will be in operation in the latter part of this year.

The National Tube Company are building a new blast furnace at Wheeling, W. Va. It is expected to be finished in September or October of 1902, and will make about 500 tons per day.

The Cambria Steel Company, at Johnstown, Pa., have practically gradually remodeled their entire six blast furnaces. It is probable that at no distant date work will be begun at Franklin, near Johnstown, with one furnace, to be followed in due season by three more.

The Colorado Fuel & Iron Company are building two large blast furnaces at Pueblo, and will probably start one during the summer, following with the other in the fall. These two furnaces are expected to make 275,000 tons per annum.

It is known in a general way that the constituent companies of the United States Steel Corporation will include in their building programme a number of new blast furnaces. It is understood that probably two new stacks will be erected at the Edgar Thomson Works, that one additional furnace will be put up at Lorain, Ohio, and that the furnace plant at the Ohio Works,

Youngstown, will be increased by an additional furnace. There has been under consideration also two new furnaces in the Shenango Valley.

The list, therefore, includes nine blast furnaces which are either likely to, or may, go into blast during the current year. Figuring conservatively, these may possibly add 300,000 tons to the production of the country for 1902.

From present indications it looks as though the year 1903 would witness the starting of at least 18 furnaces, the majority of large daily capacity. Of these quite a number will be making iron during the first half of the year. This total does not include the furnace of the Cambria Steel Company, nor those of the United States Steel Corporation. We have not included in our list the new Pioneer charcoal furnace, at Marquette, Mich., which is to go into blast this summer, because it occupies a special field.

It is, of course, very difficult to reach any conclusions as to this capacity which this additional plant may represent. Roughly it seems fair to assume that furnaces which will start this year will produce about 3100 tons daily, and that the plants which are expected to go into operation in 1903 will reach a daily product of 5500 tons exclusive of the seven furnaces for the two steel companies alluded to. If the work on these should be pushed we might at the end of the year 1903 have 3000 tons more per day. In other words, we may in the fall or winter of 1903 find our productive capacity swollen by about 11,600 tons per day, or by 4,000,000 gross tons per year. Since we shall make close to 17,750,000 tons this year, this country would have a capacity, on entering 1904, of over 21,500,000 gross tons per annum.

That, of course, is a long way ahead of us, but it justifies a warning that should be heeded by even the most enterprising and sanguine. Even if it be admitted that consumption in this country will develop further, that we have always a large outlet in the world markets, and that the newcomers must displace a number of weaker plants now in operation—even when these conditions are taken into account the distant future for new undertakings and for remodeled older plants is not a brilliant one unless they enjoy special advantages.

So far as the current year is concerned, an investigation of the situation reveals that we cannot expect a very much larger tonnage than we are now producing, although we shall have available at its close a capacity close to 19,000,000 tons annually.

Prompt response has been made by the Congress of the United States to the news of the dreadful calamity which befell the inhabitants of the Island of Martinique on the 8th inst. The appropriation of $200,000, to be immediately applied for the relief of the sufferers from the volcanic eruption, is a generous and creditable manifestation of the sympathy felt by the people of this country not only for humanity generally, but more particularly for the citizens of a sister republic to whom we have in the past been bound by the strongest ties of affection and gratitude.

The strike of boiler makers, which has been on in Cleveland since January, is at an end, having been settled by arbitration through the good offices of Sheriff Barry of Cuyahoga County. The terms of settlement were: An advance of 15 cents per day; ten-hour work day; half holiday during June, July and August; time and a half for overtime on new work, and double time for overtime on old work. The agreement to continue until January 1. The firms affected by the strike were the Cuyahoga Boiler Works, Forest City Boiler Company, Lake Erie Boiler Works, Long & Murphy Machine & Boiler Works and River Machine & Boiler Company.

Two New Blast Furnaces at Buffalo.

Another great iron works is to be erected at South Buffalo, N. Y., adjoining the plant of the Lackawanna Steel Company, now under construction at Stony Point. William A. Rogers of Rogers, Brown & Co., F. H. Goodyear and C. W. Goodyear, who own the Buffalo & Susquehanna Railroad, are the persons chiefly interested. The Buffalo & Susquehanna Railroad will be built into Buffalo, having acquired extensive terminals. The site purchased for the new plant comprises 50 acres, and a suitable ship canal will be built to it from Lake Erie to enable the largest ore vessels to unload at its docks. It is expected that each of the two blast furnaces to be built will produce about 400 tons of pig iron per day, the specialty of the new works being malleable and strong machinery foundry pig iron. The title of the new concern will be the Buffalo & Susquehanna Iron Company, the officers, so far as arranged, being W. A. Rogers, president; F. H. Goodyear, first vice-president, and C. W. Goodyear, second vice-president, the ownership being equally divided between the Goodyear firm and Mr. Rogers.

The directors of the new company are, in addition to those named, C. W. Bissell of Buffalo and Archer Brown of New York.

It is stated that work will be begun during the summer and completed within the following 18 months or two years. The company will have their own ore properties on Lake Superior, and coal mines producing coking coal in Pennsylvania. The capital to be employed in the furnace plant, ore mines and coal operations is $3,000,000. Rogers, Brown & Co. already control the Tonawanda Iron & Steel Company, whose extensive plant is located on the Niagara River near Buffalo. The new company are an entirely distinct enterprise. The same firm also control the Iroquois Iron Company, with two large furnaces at South Chicago; the Hanging Rock Iron Company in Ohio and the Punxsutawney Iron Company in western Pennsylvania, all using Lake Superior ores. To this list is to be added the Cleveland Furnace Company, who are shortly to commence the contruction of a plant at the city of Cleveland. The firm are also closely allied with the Empire Iron & Steel Company, with 12 furnaces in Pennsylvania and New Jersey, and the Allegheny Iron & Ore Company, with three furnaces in Virginia.

The Crop Outlook.

WASHINGTON, D. C., May 14, 1902.—(*By Telegraph.*)—The Department of Agriculture has reported the indicated yield of winter wheat on May 1 to be 341,000,000 bushels, being 62,000,000 bushels less than suggested by the April reports, 82,000,000 bushels less than indicated on May 1, 1901, and 60,000,000 bushels less than was harvested in 1901.

The condition of winter wheat is 76.64, against 78.8 on April 1 last and 94.1 on May 1, 1901. With three exceptions it is the lowest May condition since 1885. The area plowed up or otherwise abandoned is estimated at 4,868,000 acres, being 15.2 per cent. of the area sown last fall, which was in round numbers a little less than 32,000,000 acres. While the trade was prepared for an adverse report, the area abandoned is somewhat larger than had been generally anticipated. It has been the custom of the Department of Agriculture to square its estimates by the census returns. To those who have followed the subject recently, however, it is well known that the statistician, Mr. Hilde, has refused access to the figures of the Census Bureau for the 1899 crops. The great discrepancy existing between the Department estimates and the Census Bureau returns has been the source of much comment and not a little controversy during the past week, and various proposals have been made to harmonize the differences. As future reports will be more or less affected by the result, it is highly desirable that a speedy solution of the problem be secured.

The American Institute of Mining Engineers.

The American Institute of Mining Engineers began its eighty-second meeting on the 13th inst. at Philadelphia, Pa., and will continue in session until the 16th inst. The headquarters of the institute during the meeting will be at the Manufacturers' Club, 1409 Walnut street, where all the sessions, except one on Thursday afternoon, will be held. The registration of members for the first day was large and includes among others the following:

John Birkinbine, Philadelphia.
Edward H. Sanborn, Philadelphia.
Cyrus Borgner, Philadelphia.
Arthur Brock, Philadelphia.
Geo. F. Baer, Philadelphia.
Theron I. Crane, Philadelphia.
Geo. C. Davis, Philadelphia.
Edw. V. D'Invilliers, Philadelphia.
J. M. Dodge, Philadelphia.
Theodore N. Ely, Philadelphia.
Edgar C. Felton, Philadelphia.
F. Lynwood Garrison, Philadelphia.
H. L. Haldeman, Philadelphia.
Jawood Lukens, Conshohocken, Pa.
E. H. McCollough, Philadelphia.
Harry G. Morris, Philadelphia.
Henry G. Morse, Camden, N. J.
Theo. D. Rand, Radnor, Pa.
Percival Roberts, Jr., Philadelphia.
Pedro G. Salom, Philadelphia.
Rich. H. Sanders, Philadelphia.
C. Edw. Stafford, Chester, Pa.
Henry T. Townsend, Philadelphia.
Samuel M. Vauclain, Philadelphia.
Jno. Price Wetherill, Philadelphia.
Walter Wood, Philadelphia.
H. T. Townsend, Philadelphia.
Edmund C. Pechin, Torega, Va.
H. H. Yard, Philadelphia.
Geo. E. Thackray, Johnstown, Pa.
C. S. Batchelder, Spokane, Wash.
Dr. R. W. Raymond, Brooklyn, N. Y.
A. H. Fay, New York City.
Chas. A. Matcham, Allentown, Pa.
George Ormrod, Allentown, Pa.
Jno. F. Wilcox, Cleveland.
John Lilly, Lambertville, N. J.
Edw. B. Durham, Trenton, N. J.
Edw. W. Parker, New York City.
Arthur H. Eyles, Addingham, Pa.
Howard W. Du Bois, Philadelphia.
N. Lillenberg, Philadelphia.
W. M. Stein, Philadelphia.
G. F. Knapp, Cleveland.
Edw. L. French, Syracuse, N.Y.
Joseph Hartshorne, Pottstown, Pa.
Jas. P. Roe, Pottstown, Pa.
Wm. R. Webster, Pottstown, Pa.
Dr. T. M. Drown, So. Bethlehem, Pa.
Torbert Coryell, Lambertville, N. J.
R. P. Patterson, Philadelphia.
T. A. Rickard, Denver, Col.
W. W. Lindsay, Philadelphia.
Willard P. Ward, New York City.
J. Wesley Pullman, Philadelphia.
Benj. Smith Lyman, Philadelphia.
A. S. McCreath, Harrisburg.
Washington Jones, Philadelphia.
Leslie McCreath, Harrisburg.
Wm. H. Morris, Philadelphia.
E. E. Olcott (president), New York City.
W. H. Fluker, Tatham Mines, Ga.
August A. Miller, Philadelphia.
D. M. Parry, Indianapolis.
C. A. Bragg, Philadelphia.
G. W. Hamilton, Philadelphia.
E. C. Lindsay, Philadelphia.
D. D. Pendleton, Pittsburgh.
H. H. Seabrooke, Washington.
A. S. Morris, Philadelphia.
Wm. H. Richmond, Scranton, Pa.
Thos. Fisher, Philadelphia.
Frank M. Zeller, Philadelphia.
F. E. Bachman, Port Henry, N. Y.
Wm. A. Ingham, Philadelphia.
Wm. Kent, Passaic, N. J.
W. J. Johnson, New York City.
Chas. Schaffer, Philadelphia.
A. Ellers, Brooklyn, N. Y.
A. Raht, Salt Lake City, Utah.
Willard C. Hosbach, Philadelphia.
Albert Broden, Reading, Pa.
De Coursey May, Philadelphia.
John McLeavy, Punxsutawney, Pa.
Geo. F. Adams, Washington.
C. W. Roepper, Philadelphia.
I. H. Lee, Baltimore, Md.
A. J. Dull, Harrisburg, Pa.
B. F. Fachenthal, Jr., Rugelsville, Pa.
F. F. Sharpless, Philadelphia.
Thos. W. Eynon, Philadelphia.
Chas. Pettigrew, Sparrow's Point, Md.
Wm. H. Wiley, New York City.
W. S. de Camp, New York City.
H. M. Lane, Scranton, Pa.
L. H. Taylor, Philadelphia.
Jno. S. Kennedy, Stanhope, N. J.
Wm. G. Neilson, Philadelphia.
Stephen Badlam, Steelton, Pa.
H. E. Smith, Milwaukee, Wis.
Stephen M. Pitman, Providence, R. I.
James Bowron, Birmingham, Ala.
A. O. Ihlseng, Carthage, Mo.
J. A. Capp, Schenectady, N. Y.
H. McCormick, Jr., Harrisburg, Pa.
Walter M. James, Philadelphia.
Taylor Alderdice, Pittsburgh, Pa.
G. C. Crawford, McKeesport, Pa.
F. R. Dravo, Pittsburgh, Pa.
Wm. B. Ridgely, Washington, D. C.
Geo. A. White, New York City.
W. S. Hungerford, Jersey City, N. J.
W. J. Taylor, Bound Brook, N. J.
G. C. Henning, New York City.
J. M. Sherrerd, High Bridge, N. J.
F. S. Witherbee, New York City.
Thomas Hobson, Philadelphia.
Thomas A. Edison, Orange, N. J.
Edw. K. Landis, Philadelphia.
W. F. Mattes, Scranton, Pa.
Chas. C. Mattes, Scranton, Pa.
Geo. E. Sommers, Bridgeport, Conn.

The opening session of the meeting was held on Tuesday afternoon at 3 o'clock. John Birkinbine, chairman of the Committee on Arrangements, welcomed, in a few words, the members of the institute to the city of Philadelphia, and announced the programme for the various sessions and excursions.

E. E. Olcott, New York City, president of the institute, replied to Mr. Birkinbine, thanking the committee for their excellent arrangements. He was glad to see so many members in attendance and said that all would no doubt be pleased to help in the development of the great resources with which the Creator had blessed the country.

Mr. Olcott then introduced Dr. R. W. Raymond, who made very fitting remarks of a biographical nature of the late Clarence King, touching upon his scientific attainments and recalling incidents reminescent of the high character of the man.

Papers entitled "The Use of Ordinary Cameras in Accurate Photographic Surveying," by Howard W. Du Bois, Philadelphia, Pa., and "Puddled Iron and Mechanical Means for Its Production," by James P. Roe, Pottstown, Pa., were presented and illustrated by means of lantern slides, after a short discussion of which the afternoon session adjourned.

Tuesday Evening's Session.

The evening session was held in the regular meeting room and was largely attended by the members and ladies accompanying them. The rooms of the club house were tastefully decorated for the occasion, palms and potted plants predominating. The meeting opened with an address by the president, E. E. Olcott.

A paper on "The Cement Industry," by Richard L. Humphrey, followed, after which the session took the nature of a "Camp Fire" of the veteran members of the institute. Interesting address were made by Edmund C. Pechin, Dr. Thomas M. Drown, Dr. R. W. Raymond, E. E. Olcott and others. The session then adjourned and was followed by dancing and luncheon.

PERSONAL.

R. W. Finlayson of H. P. Grecory & Co., Sydney and Melbourne, Australia, is in Chicago. He arrived at San Francisco the latter part of April, and after spending ten days on the Pacific Coast came direct to Chicago. Mr. Finlayson will sail from New York for London on July 1. In the meantime he will visit various manufacturers of machine tools and pumps at several points in the Central West and East. From Chicago Mr. Finlayson goes to Milwaukee, Indianapolis and Cincinnati. Grecory & Co. are engineers and general machinery merchants, handling large lines of American goods in Australia.

Alfred L. Mandslay of the British marine engineering firm of Mandslay Son & Field, sailed for England on Saturday, after a brief visit to the United States.

Edward C. De Wolfe, late in charge of the drafting room of the Dodge Mfg. Company of Mishawaka, Ind., and a frequent contributor to the columns of various mechanical journals, has accepted a position as associate editor of *Steam Engineering*, which has lately removed from New York to Chicago.

George D. Wick, president of the Youngstown Iron, Sheet & Tube Company, at Youngstown, Ohio, expected to sail for Europe this week, providing he could secure passage.

Emil Swensson has opened an office in room 925 Frick Building, Pittsburgh, for the practice of his profession as a consulting and constructing engineer.

Fred. H. Wigham of George Cradock & Co., wire and wire rope manufacturers of Wakefield, England, is among the recent arrivals.

E. C. Wills has resigned the position of foundry manager with the Altoona Foundry & Machine Company, Altoona, Pa., for the purpose of managing the construction and operation of plants by the new Wills process for making steel and malleable castings, under the direction of the Evans & Wills Company of Philadelphia, Pa.

H. W. Taylor, of the firm of N. & G. Taylor Company, Philadelphia, who has been abroad with his family for the last three months, sailed from Liverpool May 10 on the "Campania."

At the meeting of the Tidewater Steel Company the statement was made that arrangements have been completed with the Suburban Gas Company to erect a plant of by-product coke ovens to furnish a coke supply.

Pig Iron Production Still Increasing.

An Output of 1,500,000 Tons Reached.

The statistics given in detail below show that the blast furnace capacity has undergone a substantial increase during April, largely due to the starting of a number of furnaces in the East and in the South. The majority of these stocks serve the foundry trade, the production of the works running on pig iron for steel purposes having already reached the present maximum.

In April the blast furnaces of the United States for the first time made over 1,500,000 tons in one month, the exact figures being 1,503,326 gross tons.

Stocks have declined further. It may be noted that the stocks in the hands of the steel works from the figures in our possession (which are not included in our report) have also declined to relatively insignificant figures. It must be noted, however, that one large producer of pig iron, not now operating a steel plant, has been steadily accumulating pig iron to meet the requirements of the converters when they start up. These stocks are not included in our totals.

The weekly capacity of the furnaces in blast on May 1 compares as follows with that of the preceding periods:

	Total capacity per week. Gross tons.	Coke capacity per week.	Charcoal capacity per week.
May 1, 1902	352,064	345,627	6,437
April 1	337,424	331,140	6,284
March 1	323,028	316,039	6,989
February 1	332,045	325,440	6,605
January 1	298,460	291,992	6,468
December 1, 1901	324,761	317,358	7,403
November 1	320,824	313,775	7,049
October 1	307,982	300,538	7,444
September 1	299,861	293,256	6,605
August 1	303,847	297,269	6,578
July 1	310,950	303,793	7,157
June 1	314,505	306,991	7,514
May 1	301,125	293,915	7,210
April 1	296,676	288,766	7,910
March 1	292,899	284,825	8,074
February 1	273,258	278,258	8,335
January 1	250,351	243,254	7,097
December 1, 1900	228,846	222,067	6,779
November 1	215,304	207,381	7,923
October 1	223,169	214,921	8,248
September 1	231,778	223,551	8,227
August 1	244,426	236,131	8,295
July 1	283,413	274,921	8,492
June 1	296,376	288,771	7,605
May 1	293,850	286,956	6,894
April 1	289,482	281,644	7,838
March 1	292,643	285,596	7,047

We present below a statement of the production of pig iron for May and since the beginning of the year. It is fair to state that these figures are based on the actual returns of the managers of the furnace plants, which embrace all of them, with the exception of three coke and anthracite furnaces. The total monthly output of these three works is about 6000 tons, and the estimate is not 1000 tons out of the way as a maximum. Occasionally reports are received too late to be incorporated in the totals. In such cases the long series of records permit of a close approximation. We are justified in the belief therefore that the report is correct within a minute fraction of 1 per cent., the possible error being within 3000 tons out of a total of over 1,440,000 tons. We may add that the returns of the charcoal furnaces include all but three stacks, whose aggregate product is under 1000 tons. The great distance of some of the works, however, more frequently lead to delays in the reports.

Monthly Production of Anthracite and Coke Pig Iron.—Gross Tons.

	January, 1902.	February, 1902.	March, 1902.	April, 1902.
New York	31,357	28,726	31,609	29,802
New Jersey	16,144	13,263	19,860	19,593
Schuylkill Valley	35,618	36,826	39,009	40,153
Lehigh Valley	50,164	40,216	41,690	51,943
Upper and Lower Susquehanna and Lebanon	57,611	47,311	46,963	58,126
Pittsburgh	357,326	317,522	351,841	350,421
Shenango Valley	108,513	89,014	102,551	105,933
Western Pennsylvania	85,151	69,048	83,856	83,220
Maryland, Virginia and Kentucky	68,340	66,882	79,947	83,728
Wheeling District	59,807	45,304	50,136	63,821
Central and Northern Ohio	81,663	69,133	83,214	96,576
Mahoning Valley	142,067	118,723	145,511	121,324
Hanging Rock and Hocking Valley	32,463	29,171	32,127	31,045
Illinois, Wisconsin, Missouri and Colorado	160,386	163,402	199,635	198,436
Alabama	110,103	95,673	115,929	114,355
Tennessee	30,960	27,396	31,137	26,979
Total coke pig	1,427,673	1,257,610	1,445,587	1,475,455
Production charcoal pig.	28,969	28,207	27,836	27,871

It will be observed, therefore, that the total production of pig iron during the first four months of the current year was 5,719,208 gross tons, in spite of the fact that February is a short month, and that there were troubles with the coke supply during this year. This is at the rate of 17,150,000 tons, as compared with 15,878,354 tons in 1901. But we have every reason to expect a larger make because a number of older furnaces, long idle, are being put into shape, and because some new stacks will become producers. It would not be surprising if we came near adding 2,000,000 tons this year to the production of 1901.

The status of the anthracite and coke furnaces was as follows on May 1:

Coke and Anthracite Furnaces in Blast May 1, 1902.

Location of furnaces.	Total No. of stacks.	Number in blast.	Capacity per week.
New York	13	6	6,954
New Jersey	6	3	3,597
Spiegel	3	3	536
Pennsylvania:			
Lehigh Valley	27	22	12,439
Spiegel	1	1	136
Schuylkill Valley	15	11	9,702
Lower Susquehanna	10	6	6,097
Lebanon Valley	12	8	7,399
Pittsburgh District	33	31	81,464
Spiegel	1	1	301
Shenango Valley	18	16	23,679
Western Pennsylvania	21	14	18,090
Spiegel	1	1	1,328
Maryland	5	4	6,364
Wheeling District	10	9	14,206
Ohio:			
Mahoning Valley	15	15	28,309
Central and Northern	14	13	22,534
Hocking Valley	3	2	898
Hanging Rock	13	11	6,579
Illinois	18	17	35,209
Spiegel	1	1	903
Minnesota	1	0	0
Wisconsin	5	5	5,098
Missouri	1	1	885
Colorado	3	3	4,213
The South:			
Virginia	20	16	10,972
Kentucky	7	5	2,200
Alabama	40	31	29,428
Tennessee	16	10	6,107
Georgia	1	0	0
North Carolina	1	0	0
Totals	335	266	345,627

There were blown in during April the Empire Company's furnace at Allentown and the fourth Crane, a furnace of the Allentown Rolling Mill, and Durham in the Lehigh Valley, two furnaces of the Shenango Company, Robesonia in the Lebanon Valley, one Mingo in the Wheeling district, one Wellston in the Hanging Rock region, Missouri furnace in Missouri, Lady Ensley of the Sloss Company, one Alice, one De Bardeleben and one Ensley of the Tennessee Company, and one Grand Rivers in Kentucky. Work was temporarily stopped by Oxford in New Jersey, Macungie in the Lehigh Valley, Atlantic in the Shenango Valley, one South Chicago in Illinois and Helen in Tennessee.

The status of the charcoal furnaces was as follows:

Charcoal Furnaces in Blast May 1, 1902.

Location of furnaces.	Total No. of stacks.	Number. in blast.	Capacity per week.
New England	7	3	168
New York	3	2	702
Pennsylvania	4	1	37
Maryland	1	1	95
Virginia	3	0	0
Ohio	9	1	43
Kentucky	3	0	0
Tennessee	1	0	0

Georgia	4	1	300
Alabama	4	3	786
Michigan, Missouri and Wisconsin	10	8	4,196
Oregon	1	1	100
Texas	4	0	0
Totals	54	21	6,437

Furnace Stocks.

The position of furnace stocks, sold and unsold, as reported to us, was as below on May 1, as compared with the five preceding months, the same furnaces being represented as in former months. This does not include the holdings of the steel works producing their own iron:

Stocks.	Dec. 1.	Jan. 1.	Feb. 1.	Mar. 1.	Apr. 1.	May 1.
Anthracite and Coke	181,021	179,993	121,762	96,315	69,974	63,583
Charcoal	42,441	38,091	32,438	29,030	23,289	20,276
Totals	223,462	218,084	154,200	125,348	93,263	83,859

Jones & Laughlin Steel Company.

On June 2 next application will be made to the Secretary of State of Pennsylvania for a charter for the Jones & Laughlin Steel Company of Pittsburgh. The new corporation will take over the entire interests of Jones & Laughlins, Limited, operating the American Iron & Steel Works, Eliza furnaces, Soho furnaces and subsidiary companies at Pittsburgh. The present copartnership of Jones & Laughlins will expire in August, 1903. The application for the charter for the new corporation was signed by B. F. Jones, Jr., Willis L. King, William Larimer Jones, James B. Laughlin and Irwin B. Laughlin. The present capital of Jones & Laughlins, Limited, is $20,000,000, but the new capital stock of the Jones & Laughlin Steel Company will be much larger. The firm of Jones & Laughlins, Limited, were originally established in Pittsburgh in 1852, and the concern are one of the oldest in the country. Jones & Laughlins, Limited, operate the four Eliza furnaces in Pittsburgh, having a total annual capacity of 800,000 tons, also the Soho furnaces in Pittsburgh, having an annual capacity of about 100,000 tons. This stack will shortly be blown out for relining and repairs. Jones & Laughlins also operate a Bessemer steel works and open hearth steel plant and turn out about 800,000 tons of Bessemer and open hearth steel annually. This output will be very materially increased in the near future by the starting of a Talbot open hearth furnace, which is expected to make about 400 tons of steel per day. In finished material Jones & Laughlins, Limited, make probably a greater variety of product than any other concern in the country. They are large manufacturers of plates up to 90 inches wide, beams and channels up to 24 inches, spikes, rivets and bolts, chain, cold rolled shafting and other smaller products. The concern own large ore properties in the Mesaba and Marquette ranges, and have long time contracts for iron ore in the same ranges. The company own all the capital stock of the Vesta Coal Company, the Monongahela Connecting Railroad, the Interstate Iron Company, who are the ore department, and of the Blair Limestone Company, Limited, operating extensive limestone quarries near Hollidaysburg, Pa. It is understood that the capital stock of the new corporation will be held by members of the present concern, and none of it will be placed on the market.

A New Heat Resisting Metal.—The Cole Mfg. Company of Chicago will shortly bring out a new cooking range, which will be called the Colized steel hot blast range. They claim that this range will have more novel features in its construction than any cooking device put on the market during the last 15 years. One of the most important of these new features is the use of Colized steel, in place of gray cast iron, in the fire box linings and other parts which are subjected to great heat. Colized steel is a mixture for castings perfected by President E. C. Cole and which it is claimed has four times greater heat resistance than standard gray iron castings and two times greater than malleable castings. The company have made exhaustive tests which they state have proved this claim. Hitherto, a great deal has been done in the manufacture of castings to secure strength and toughness, but no special attempt has been made to secure mixtures of heat resisting quality. The company have acquired a high reputation as originators of stove specialties. In bringing out the new range they are entering a totally different field from that in which they have hitherto operated, and if they prove as sucessful in this line as in others they will add still more to their reputation.

MANUFACTURING.

Iron and Steel.

The Inland Steel Company announce that their new plant at Indiana Harbor, Ind., will be in operation 'n June with a daily capacity of 500 tons of open hearth steel. Arrangements are being made to roll the lighter sections of structural angles, channels and I-beams at the new works, in addition to open hearth billets, slabs, sheet and tin plate bars, shafting, plain and galvanized sheets. The company have already booked orders for a liberal tonnage of billets, sheets and heavy bars for delivery extending into the second half of this year. The increase in the capital stock of the company, recently announced, was made to provide funds for extending the scope of the company's operations.

Articles of association have been filed by the Saginaw Iron Company of Michigan, with Minnesota headquarters at Duluth, with a capital of $75,000.

Franklin Furnace, at Franklin Springs, Oneida County, N. Y., which has been idle for several years, will be blown in June 15. The furnace will be operated by the Franklin Iron Mfg. Company, owners of the furnace and ore mines at Clinton, both of which are now being put into condition for operation. The plant will be under the management of T. B. Walker. The stack is 70 x 15 feet, and has an annual capacity of about 30,000 tons of foundry iron.

A movement is on foot at Newark, Ohio, looking toward the erection of a large sheet and tin plate plant in that city. It is stated that a syndicate of foreign capitalists, through the efforts of prominent Newark citizens, have secured an option on the Forry farm of over 100 acres, where it is intended to erect the plant.

The La Follette Coal, Iron & Railway Company of New York City expect to blow in their new furnace, at La Follette, Tenn., within the next few weeks. The furnace is 95 x 20 feet and has an annual capacity of 125,000 tons of coke pig iron.

A vote will be taken soon in the town of Kenton, Ohio, upon the question of issuing $50,000 in bonds, to be paid to the Champion Iron Company, upon condition that they rebuild their plant in Kenton. The sentiment among the people is very strong in favor of the proposition. The plant of the Champion Iron Company in Kenton was destroyed by fire on April 23, but they have gotten into temporary quarters and are running very near their full force again.

The puddling department of the Sharon Works of the Republic Iron & Steel Company, at Sharon, Pa., will be started at an early date. There is a very complete puddling mill at the Sharon Works and the company are very desirous that all their puddlers report for duty at once. J. D. Huggins is superintendent of the plant.

The report that the Railway Steel Casting Company, recently organized in Pittsburgh to build a plant at Tarentum, Pa., for the manufacture of railway castings, would be unable to secure structural material for their new works, is untrue. Active work has started on the building of this new plant, and it will be pushed to completion as fast as possible. The company hope to have the new works in operation within three or four months.

M. Lanz & Sons, South Side, Pittsburgh, will erect an addition to their plant 20 x 80 feet. It will be used as a warehouse, while the present warehouse will be used for an extension to the plant. They manufacture bolts, nuts, rivets, spikes, washers and hinges.

Shenandoah Furnace, in Virginia, has gone into blast. Victoria Furnace, in the same State, will blow in at an early date.

The Bettendorf Axle Company, Davenport, Iowa, advise us that the fire which damaged their plant to the extent of $100,000 on May 1 destroyed their railway specialty department. That branch of their business was about to be removed to Gilbert, a suburb of Davenport, where a site has been secured and building operations are already under way. In the meantime they are clearing away the débris and are arranging to resume operations at the old plant, which can be accomplished with but little difficulty, as the power plant is intact and the connections with the hydraulic system are but slightly disarranged. The machinery in the wagon department, damaged in last winter's fire, is rapidly being restored, and the buildings then destroyed are being rebuilt and are nearing completion.

The Wallace Barnes Company, Bristol, Conn., are building an addition, 18 x 36 feet, to their stock room to facilitate the handling of their business. They carry a large stock of fine cold rolled spring steel of all thicknesses, including English, French and American brands. The company have recently installed considerable new machinery.

The Detroit Iron & Steel Company, Detroit, Mich., have organized with the following officers: Daniel R. Hanna, president; C. C. Bolton, vice-president; Charles W. Baird, secretary and treasurer, and F. B. Richards, general manager.

The Kidd Brothers & Burgher Steel Wire Company, McKee's Rocks, Pa., near Pittsburgh, contemplate increasing their annealing and straightening departments, and also expect to add to their machine shop facilities. Their constantly increasing business in Kidd polished drill rods, pinion wire and needle wire make these changes imperative.

The Cleveland Furnace Company, the new blast furnace company recently organized by interests identified with Rogers, Brown & Co., have selected a site in Cleveland. It will be located on the river front at Clark avenue, about a mile beyond the location of the Central Furnace of the United States Steel Corporation. The site selected fronts on the B. & O., Wheeling & Lake Erie and Belt lines, as well as on the river. By dredging the river it will be possible to unload the largest boats at this point. The company have plans for two stacks, but only one will be built for the present. Before the first stack is in, about a year hence, work may be started on the second. Each will have a capacity of 400 tons of Bessemer pig per day, or 300 tons of foundry pig iron, being classed as a 400-ton furnace. The arrangement contemplates the production of Bessemer, foundry, gray or open hearth pig iron, but Bessemer pig will probably be the chief product.

The Ohio Rolling Mill Company at Findlay have announced that they will double the capacity of their 10-inch mill, adding 50 men to the pay roll.

Official advices from the John A. Roebling's Sons Company, Trenton, N. J., say that plans are under way for their new wire plant to be erected at St. Louis, Mo.

The Hillman Land & Iron Company of St. Louis, Mo., will build 200 coke ovens this summer at Sturgis, Ky., and will also build 16 miles of standard gauge railroad to connect the ore lands with the furnaces at Grand Rivers.

General Machinery.

The Stanyon Engineering Company, Empire Building, Pittsburgh, have been appointed Pittsburgh agents for the Spicer Mfg. Company, New Philadelphia, Ohio, manufacturers of furnace castings and floor plates, also for the Pittsburgh Steel Shafting Company, Rankin, Pa., manufacturers of polished and turned steel shafting, forged shafts and cold drawn shapes.

The new shop of the Warren Steam Pump Company, Warren, Mass., will be 84 x 128 feet, one story, equipped with a 15-ton electric traveling crane with 40-foot span. All machinery has been contracted for.

Excelsior Tool & Machine Company, East St. Louis, Ill., have been incorporated with a capital of $15,000. The incorporators are T. F. Phillippi, M. B. Nolan, E. M. McDonnell.

Northwestern Iron & Machinery Company, Chicago, have been incorporated with a capital stock of $10,000. The new company will deal in old iron and second-hand machinery. The incorporators are M. Dry, A. Cohn and M. Stolarsky.

The Max Ams Machine Company, 372 Greenwich street, New York City, have been incorporated with a capital stock of $220,000. The company recently erected a shop at Hoboken, N. J., for the manufacture of canning machinery. The incorporators are Max Ams, Charles Ams and Julius Brenzinger.

The Coshocton Tool Company, who were recently organized at Coshocton, Ohio, have elected the following officers: D. A. Raiff, president and general manager; C. B. Hunt, vice-president; H. C. Herbig, secretary-treasurer. They have selected a site, and will close contracts at once for the erection of plant and purchase of equipment.

Rayne, La., will vote May 20 on the question of issuing $20,000 in bonds for an electric plant and water works. O. Bronssard, Mayor.

Some little new machinery is required by the Columbus Wire & Iron Works, Columbus, Ohio, for their new factory, 50 x 90 feet, the erection of which will be started shortly.

The S. A. Woods Machine Company of South Boston, Mass., and the J. A. Fay & Eagan Company of Cincinnati, Ohio, furnished the machinery for the new repair shop of the Chicago, Rock Island & Pacific Railway, at Horton, Kan.

Complete equipment of machinery, &c., will be required by the Union Developing Company of Clarksburg, W. Va., who have bought 500 acres of land adjoining that city, which they will improve by erecting houses, water works, electric plant, &c. William V. Brooks is manager.

Having outgrown their present facilities, the Hyatt Roller Bearing Company of Harrison, N. J., are having plans prepared for a modern shop, 50 x 200 feet, two stories, to be erected on the property adjoining their present plant. The new shop is but a part of the many improvements contemplated to take care of their increasing trade, both here and abroad.

A small power press and a hand or speed lathe are required by the Todd Electric Mfg. Company, Meriden, Conn., recently incorporated with a capital stock of $30,000 for the manufacture of the Todd patent static electrical and X-ray machine and appliances. The company have taken over the plant and business of H. B. Todd.

The Keystone Driller Company of Beaver Falls, Pa., builders of portable drilling machinery, have taken a contract for three drilling equipments, which are to be utilized for testing placer ground in the Ivory Coast gold fields, West Africa. One of the largest types of drillers has also been ordered for shipment to Johannesburg, South Africa.

The Seelar Elevator Company of Pittsburgh, recently incorporated to succeed the Seelar Elevator Works, are putting up a plant in Pittsburgh to build elevators, which will be ready about November. The Seelar Elevator Company have a capital stock of $75,000. The officials are J. L. Seelar, president; L. F. Seelar, secretary, and D. I. Haines, treasurer.

A. W. Gump of A. W. Gump & Co., Dayton, Ohio, formerly manager of the Shelby Cycle Mfg. Company, has bought the entire contents of that plant, consisting of screw machines, automatic machines, punch presses, lathes, &c. This stock has been moved to Dayton, where part of it will be sold and the balance used to manufacture special lines of metal goods for the general trade.

Northern Engineering Works, Detroit, Mich., have been awarded the contract for a special double hoist, 15-ton electric traveling crane, for handling billets for the Republic Iron & Steel Company's Youngstown plant.

The Marine Iron Works, Chicago, have quite an extensive assortment of special marine work under construction on orders, among the most important being the single screw, private steam yacht "Oswegatchie," for Mrs. Carrie A. W. Vilas of Chicago. The yacht is designed for cruising among the Thousand Islands of the St. Lawrence River. The boat will make the interesting trip via the Great Lakes and Welland Canal in a few days; a large amount of machinery for the Tabasco-Chiapas Trading & Transportation Company, Mexico, doing an extensive business in the tropics; a paddle wheel steamboat for the Zaragoza Mining Company of the United States of Colombia; double 9 x 36 stern paddle wheel machinery for the Bluefields Steamship Company, Guatemala; horizontal tandem compound surface condensing stern paddle wheel machinery, four cylinders, 12 and 24 x 72, and a 100-foot stern paddle wheel steamboat for Texas waters. Among foreign countries represented by work now under way at these shops are: Turkey, Holland, Brazil, Guatemala, Bolivia, Ecuador, Mexico and Canada. The Marine Iron Works' new plant is equipped with electrically driven power throughout, new machinery and patterns, all of which aid them in maintaining the high degree of merit and promptness of completion which have enabled them to build up a substantial business.

The business of Harry Gunther, San Antonio, Texas, has been incorporated as the Gunther Foundry, Machine & Supply Company, with a capital stock of $50,000. The incorporators are Harry Gunther, G. R. Robbins and R. W. Lewis.

The Novelty Iron Company of Canton, Ohio, will erect an addition to their plant. It will cost $8000, and will be completed within four months.

The Columbus Railway Company, Columbus, Ohio, will build a large brick machine and repair shop, and will install new machinery.

The Oster Mfg. Company of Cleveland, manufacturers of die stocks, will build a new factory building, 120 x 50 feet, two stories high, on Schiely Court, adjoining the present factory. John Gill & Sons are the builders.

The Brown Hoisting Machinery Company of Cleveland have taken out a permit for the erection of a pattern shop for their new plant. The building will be brick, 180 feet long, 60 feet wide and 40 feet high without a single window in the entire structure.

The Fore River Ship & Engine Company, Quincy, Mass., have increased their equipment by the addition of 75 more pneumatic tools, making several hundred now in use in the yard. The air for these is applied by a new 5000-foot air compressor recently installed in the power house, the 1000-foot compressor, formerly used, being held in reserve. The company have recently finished one of the largest and quickest shipwright jobs ever done in Boston harbor. It is a rudder forging for the British steamship "Nyassa," which is undergoing repairs at the Townsend & Downey Works. Its hight is 36 feet 2 inches; breadth, 6 feet 8 inches, and diameter of the stock, 8 inches. The work was completed in three weeks. The official Government test of the casting of the 20-ton steel stem for the battle ship "New Jersey" was made last week, and was entirely satisfactory.

The Bessemer Foundry & Machine Company, Bessemer, Ala., have put in a hoisting engine for elevating stock to cupola. They have just finished a set of hearth and tuyere jackets for the Red River Furnace Company, Clarksville, Tenn., and are now making a set of jackets, iron troughs and water trough for the Central Iron & Coal Company, Tuscaloosa, Ala., also two lead smelting kettles for the St. Joseph Lead Company for their Herculaneum plant; two 46-inch steam cylinders for the Gadsden, Ala., plant of the Alabama Consolidated Coal & Iron Company; one 42-inch steam cylinder for the Chattanooga Furnace Company, Chattanooga, Tenn.; one 42-inch cylinder for the Lacey-Buek Iron Company for their furnace at Trussville, Ala. They have just completed for the Tennessee Coal, Iron & Railroad Company, Bessemer division, two 42-inch steam cylinders, and one top head for blowing cylinder; also one 42-inch

steam cylinder for their Ensley division and one 37½-inch steam cylinder for their Alice Furnace, Birmingham. They have recently filled orders for 250 frames for coke ovens in the Birmingham district, and are now busy with new work and repairs for the rolling mill furnaces and mines in the same territory.

The Pittsburgh Gage & Supply Company, Pittsburgh, Pa., will extend their new works at 3101-3111 Liberty street for the manufacture of their White Star oil filters. The company have recently been appointed representatives of the Weller Mfg. Company of Chicago for their line of elevating, conveying and power transmitting machinery.

The recently organized Richards Machine Company, Atlanta, Ga., dealers in new and second-hand machinery, have opened a store at 25 Peters street.

The Hood Machine Company, Birmingham, Ala., are adding a blacksmith shop and installing an elevator in their foundry for the hoisting of stock to the cupola. They have an abundance of work on hand, including all the structural irons required in the new building being put up by J. H. Menge & Son, New Orleans, La.

The Richards Iron Works, engineers, machinists and founders, Birmingham, Ala., have succeeded to the plant and business of John D. Lykens. They are now installing a new pumping plant for the Standard Oil Company, and are setting up the new machinery in the plant of the Alabama Ice Company, at Jasper, Ala. The firm are composed of Joseph C. and Charles J. Richards.

The Fulton Foundry & Machine Works, Atlanta, Ga., have recently added a Universal miller, planer, lathe and drill presses to their machine shop equipment, and have erected a new cupola and adjuncts in their foundry, all being of the latest types. At present the company are confining themselves to doing general repair work, with brass and aluminum castings as a specialty. They contemplate manufacturing larger machinery in the near future.

The Cleveland Cliffs Iron Company and other Cleveland parties are interested in the erection at Munising, Mich., of one of the largest paper mills in the country. The plant will be located near mining properties owned by the Cleveland Cliffs Iron Company, which are covered with spruce, hemlock and other timber suitable for the manufacture of paper. Architects are preparing plans for five large buildings, and the plant is to be in operation by January 1, 1903. The equipment to be installed will be capable of producing 40 tons of paper daily. H. H. Everhard, a prominent paper manufacturer, is interested in the project, and will have supervision of the erection of the plant.

George H. Bowler, a well-known Cleveland machinery merchant, has taken the sole selling agency for the line of heavy punches and presses built by the Cady Machine Company of Cleveland. Mr. Bowler is also closing out the equipment of corrugating rolls and presses, comprising the plant of the Thompson Roofing Company, Cleveland.

Boilers, Engines, &c.

The Domestic Engine Company, Hagerstown, Md., manufacturers of gas and gasoline engines, have moved into larger quarters in the building formerly occupied by the Hagerstown Steam Engine Company, which they have leased.

The Marion Light & Power Company, Marion, Ala., have been granted a 40-year franchise for an electric plant. T. D. Kemp, secretary and manager, Selma, Ala.

The Globe Iron Works Company, Minneapolis, Minn., manufacturers of white gasoline engines, have been incorporated under the same name with a capital stock of $200,000.

The Cleveland Water Works Department will shortly readvertise for bids on 2500 horse-power of boilers required for the new Kirtland Street Pumping Station. The contract was practically closed some time ago, but was canceled because of a disagreement among the city officials.

The Toledo Railway & Terminal Company of Toledo have let contracts for a new round house, water tanks, coal chutes and repair shop. An electrical plant for power and lighting will be installed.

The Birmingham Machine & Foundry Company, Birmingham, Ala., are very busy on engine work, especially on blowing engines for blast furnaces.

Shook & Fletcher, Birmingham, Ala., state that among sales made by them lately are the following: A 1650 horse-power Cahall boiler, two steam shovels to the Republic Iron & Steel Company for their mines at Goethite, Ala., and one steam shovel to the Standard Iron Company, Goodrich, Tenn. They represent the Thew Automatic Shovel Company, Lorain, Ohio. They also report large sales of fire brick for the Portsmouth & Kentucky Fire Brick Company, Portsmouth, Ohio. They have contracted with the Birmingham Railway, Light & Power Company to buy all the old rails being taken up in connection with the $1,500,000 improvement of their property, which is now proceeding.

The Maxim Company, Birmingham, Ala., report having been successful in introducing their boilers to various points in the South.

Luther Brothers, Milwaukee, Wis., manufacturers of gas and gasoline engines, emery grinding machines, &c., have been incorporated under the name of the Luther Brothers Company, with a capital stock of $50,000. The officers are: S. S. Newton, president; G. M. Luther, vice-president, and C. J. Luther, secretary and treasurer.

Foundries.

The Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., are building an addition to the foundry, 30 x 60 feet, and a small addition for hydraulic elevators, blowers, &c. All machinery has been secured.

J. S. McCormick & Co., manufacturers and dealers in foundry equipment and supplies, Pittsburgh, have completed extensive improvements to their plant, at Mauch Chunk, Pa., for the production of foundry facings.

The Richmond Foundry & Mfg. Company, Richmond, Va., recently incorporated, are building a new plant. The officers are Arthur Scrivenor, president and general manager, and J. Stuart Reynolds, secretary and treasurer.

The Utica Pipe Foundry Company, Utica, N. Y., manufacturers of cast iron pipe, &c., are erecting a steel frame foundry building, 46 x 85 feet, for the manufacture of heavy castings, and a steel frame machine shop, 52 x 152 feet, which will be equipped with modern machinery for the handling of all kinds of flanged work. The foundry will be commanded by a 30-ton traveling crane and the machine shop by a 15-ton traveling crane, both of which will be furnished by the Morgan Engineering Company. All the machinery will be electrically driven by General Electric motors.

Moffett & Banholzer, Birmingham, Ala., state that their business has kept growing far beyond expectations since they commenced in August last. They are running full time, and contemplate making extension and improvements in their plant shortly. They have just completed a contract of 128 tons of castings for the Armour Fertilizer Works, Atlanta, Ga., and have two bids out for the same class of work. They are making large castings for creosoting cylinders for a New Orleans, La., house; 50 tons of castings for Mobile, Ala., and have in addition several orders booked for castings for different Birmingham firms.

The R. MacKellar's Sons' Company, Peekskill, N. Y., manufacturers of foundry facings, recently incorporated with a capital stock of $10,000, are rebuilding their plant, which was destroyed by fire March 31. The new building will be 32 x 90 feet, and will be operated for the present by turbine water wheels. Later it is their intention to install an engine of about 50 horse-power capacity. Most of the machinery was purchased from Munson Brothers of Utica. The Peekskill Facing Mills were established in 1844 by Robert MacKellar, and were operated by him until April 1, 1901, at which time he died. From that time until March 31 the plant was operated by the estate of Robert MacKellar, when it was taken over by the new company.

The J. T. Carmody Foundry, Engine & Machine Works, Cedar Rapids, Iowa, whose plant was recently destroyed by fire, are rebuilding, and already have the necessary equipment on the grounds. The plant will consist of a machine and pattern shop, 40 x 120 feet, two stories, and a foundry, 60 x 170 feet, equipped with traveling crane, overhead circular hoists and two cupolas, one of 10 tons and one of 20 tons capacity. It is expected that the works will be ready for operation in about 60 days.

James Barker, Philadelphia, Pa., will build a one-story brick addition, 98 x 150 feet, to his foundry. No new machinery will be required.

The Philadelphia Foundry & Machine Company, Thirtieth street and Gray's Ferry road, Philadelphia, Pa., have completed the installation of electrical apparatus as the medium of power for the entire operation of their plant. The various departments are supplied with independent motors for the operation of machinery, blowers, rattlers, &c. The company have been in operation since the first of the year, and advise us that business conditions with them are very favorable. At present they have work on hand consisting of large castings for the Baldwin Locomotive Works, Southwark Foundry & Machine Company and a number of other concerns.

The Kenton Hardware Mfg. Company of Kenton, Ohio, are planning to erect a new foundry. It will be a wing to the present plant, and is badly needed to take care of their greatly increased business. On account of the present press of business it is quite possible that the struture will not be built until late in the summer.

Fires.

The Blue Ridge breaker, at Peckville, Pa., coal mines of the New York, Ontario & Western Railroad Company, was destroyed by fire May 11. The loss is about $125,000.

The oil plant of Swan & Finch, at Elizabethport, N. J., was destroyed by fire May 8. The loss is about $100,000.

The Anthe Machine Works, Cincinnati, Ohio, suffered a $15,000 loss by fire May 10.

The plant of the C. K. Williams Paint Company at Easton, Pa., was destroyed by fire May 11. The loss is about $100,000.

Davidson & Swenson's machine and boiler shops at Casselton, N. D., were recently destroyed by fire: loss about $8000.

The machine and blacksmith shop of the International Creosote Works, at Beaumont, Texas, was destroyed by fire recently. The loss will reach $7000.

Hermann Boker & Co., makers of ordnance and military supplies, and A. H. Funke, dealer in guns, bicycles, small arms and ammunition, at 101-103 Duane street, New York City, suffered considerable loss by fire May 13.

The Iron City Mfg. Company's plant at Pueblo, Col., was partly destroyed by fire recently. The loss is estimated at about $100,000, with insurance of about $50,000.

Bridges and Buildings.

The New England Structural Company of Boston have contracted to furnish in July the steel work for the new retort house for the Lynn Gas & Electric Company, at Lynn, Mass.

Hardware.

J. D. Warren Mfg. Company are increasing the capacity of their factory at Quincy, Ill., by the installation of new machinery. Mr. Warren is spending a couple of weeks at the works while the work of installation is proceeding. The company find it necessary to be prepared to make quicker shipments than they have been able to make heretofore. A lease has been taken on the Rogers factory building, as Quincy is to be used as a distributing as well as a manufacturing point. Charles A. Abbeth, formerly of Quincy Show Case Company, will have the management of the Quincy business. Mr. Warren expects to employ 100 men when the work is fully completed. The company now have on their books an order for two carloads of fixtures for Honolulu.

James McKay & Co., Pittsburgh, Pa., manufacturers of chain, are now operating 75 fires. Their plant at McKee's Rocks was built for 100 fires, and the other 25 are being added as fast as possible.

The American Bolt & Machine Company, Ottawa, Ohio, recently incorporated with a capital stock of $100,000, have completed their organization by the election of the following officers and directors: M. A. Bowlus, president; Jno. Thompson, vice-president; H. L. Crawfis, treasurer; M. P. Goetschius, secretary; C. H. Corey, D. W. Jay, C. H. Rice, and J. H. Doring. For the present the company will have their bolts and nuts made by contract.

The M. B. Schenck Company, Meriden, Conn., manufacturers of casters for trucks and furniture, have added one story to a part of their plant 140 x 40 feet. This concern expect shortly to make an addition to their factory that will double their floor space.

The Austin-Bryan Mfg. Company, plow manufacturers, Birmingham, Ala., are erecting a separate office in proximity to their works. It is of two stories, giving ample facilities for the transaction of their business. They expect to build a large foundry during this summer. The volume of business during last season was very satisfactory, and the company are preparing for a large increase next season.

Standard Scale Company, manufacturers of scales, trucks and corn shellers, Rome, Ga., are making important improvements in their factory, building a large warehouse together with machine shop and additions to present structures. They have just placed an order for a 150 horse-power Corliss engine with the Southern Engine & Boiler Works, Jackson, Tenn., and have purchased several machines from the American Tool Company of Cincinnati.

M. S. Brooks & Sons, Chester, Conn., manufacturers of bright wire goods, are building an addition to their plant 64 x 30 feet, of wood, three stories high.

International Steel Post Company, St. Louis, Mo., manufacturers of steel fence posts, wrought iron and wire fencing, ornamental iron work and International fire and water proof paint, report March and April business as by far the largest in their history. They refer to orders ahead as sufficient to keep them busy for four months.

The D. W. Lowell Shovel Handle Company, Lewiston, Maine, have been organized with a capital of $10,000, $8000 paid in. The officers are Frank B. Norris of Auburn, president, and D. W. Lowell of Lewiston, treasurer.

The Southern Bolt & Nut Company of Birmingham, Ala., manufacturers of nuts, bolts, washers, &c., are contemplating some radical improvements in their plant. The present factories are referred to as inadequate to supply the demand for their products.

Miscellaneous.

L. Pine, manager of the Singer Mfg. Company, cabinet factory, South Bend, Ind., announces the end of the strike, which has caused so much annoyance to the company. The men have returned to work and the factory is now being operated satisfactorily to all parties interested.

F. M. Pease, Incorporated, railway supplies, Chicago, have purchased the plant of the Muskegon Car Company, Muskegon, Mich. The Muskegon plant, which has been idle for several years, will be dismantled; much of the machinery will be taken to the car and locomotive works at Hegewisch, Ill. The increased equipment will give to the latter works a capacity of about 20 cars per day. The Muskegon works, when in operation, turned out about 15 cars daily.

The Chicago Railway Equipment Company, Chicago, have recently purchased the Monarch Break Beam Company, Limited, Detroit, and the break beam department of the Sterlingworth Railway Supply Company, at Easton, Pa.

The new Winona Mfg. Company, Winona, Minn., are constructing an addition to their main factory building, which is 50 x 90 feet and two stories in hight. This improvement was found necessary for the storage of raw material and to facilitate the shipment of the completed machines. The Winona Company, among others, have experienced great difficulty in obtaining material used in the construction of their machines, and to guard against aggravating delays has been one of the main objects for erecting the new building. Difficulty has also been experienced in obtaining cars for making the speedy shipment of the finished machines. With the completion of the new building this delay will be eliminated.

The New Britain Gas Light Company, New Britain, Conn., are building an addition to their condensing room, the equipment for which will be furnished by the Western Gas Construction Company.

The American Concrete Steel Company, Prudential Building, Newark, N. J., have been incorporated for the purpose of constructing fire proof floors, walls, bridges, &c., buying the materials in the open market.

The Eastman Metallic Body Company of Cleveland, manufacturers of steel bodies for automobile and carriages, have outgrown their present quarters, and are considering a proposition from the Board of Trade of Sandusky, Ohio, to locate their plant in that city. They have recently increased their capital stock from $100,000 to $150,000.

The Standard Railway Equipment Company have moved their plant from St. Louis, Mo., into their new buildings at East St. Louis, Ill., where they have over double the capacity of their old plant.

The W. S. Dickey Clay Mfg. Company, Kansas City, Mo., have purchased 148 acres of land adjoining Chanute, Kan., where they will erect a large plant for the manufacture of tiles, brick and tile fence posts and cattle guards. It will be located just south of the city, and spurs from the Atchison, Topeka & Santa Fé and Missouri, Kansas & Texas railways will run through the plant.

The Des Moines Wagon Works, Des Moines, Iowa, are building a plant for the manufacture of farm wagons and implements. Most of the required machinery has been purchased. L. H. Hixson is proprietor.

The Phillips Insulated Wire Company of Pawtucket, R. I., will soon commence the erection of another good sized addition to their plant at Darlington.

The Standard Mfg. Company, Galesburg, Mich., manufacturers of wind mills, have been incorporated under the same name, with a capital stock of $200,000, for the purpose of extending their business.

The Ajax Metal Company, Philadelphia, Pa., manufacturers of Ajax plastic bronze, are receiving bids for the erection of a new shop, 100 x 171 feet, which will be used as a metal refining department for the elimination of impurities from scrap metals and the production of refined ingots by a patented process.

The Southern Cement Company, Birmingham, Ala., have removed their office to 2023 First avenue. They are now enlarging their plant to increase production to 1000 barrels per day.

The Chain Belt Company's new plant, at Milwaukee, Wis., will be 60 x 120 feet.

The Ketterlinus Lithographic Mfg. Company, Philadelphia, Pa., will build an addition of two stories, 80 x 80 feet, to their present six-story building at Fourth and Arch streets.

The Stanley Instrument Company, Great Barrington, Mass., are considering plans for the enlargement of their plant.

The National Carbon-Peat Company, New Haven, Conn., are having plans prepared for a large plant for the production of coal from peat by a patented process, which they claim has the same heat qualities as cannel coal, but without gases, smoke or clinker. If the experiments now going on with a small consignment of iron ore prove successful, it is possible that a blast furnace will be erected near their plant.

The Gowanda Agricultural Works, Gowanda, N. Y., have incorporated under the same name with a capital stock of $36,000. The incorporators are Samuel G. Keyes and Charles H. Phelps of Gowanda and George I. Lincoln of Iroquois.

The Canton Mine Door Company of Canton, Ohio, have been succeeded by a new company, to be known as the American Mine Door Company, who have been incorporated under the laws of New Jersey with $300,000 capital stock. Half of this stock has been retained by the former owners of the Canton company, and others interested are said to be J. C. Trask and A. T. De Forst of Cleveland, Mr. Upstill, a wealthy coal operator, and Mr. Young, business partner of M. A. Hanna. The plant will remain in Canton and will be enlarged.

The Iron and Metal Trades.

Our monthly blast furnace statistics bring out one very interesting fact, and that is that for the first time in the history of the industry, we have reached the enormous output of over 1,500,000 gross tons in one month. If nothing happens to disturb the regular running of the furnaces, and if the old stacks now getting ready and the new one building get into line, as expected, we may reach a production of 18,000,000 tons this year, in spite of the fact that we did not attain that rate during the first quarter.

Our statistics show that on May 1 we had in operation furnaces with a weekly productive capacity of 352,064 tons. The stocks in the hands of furnaces which are sellers in the open market have now declined to 63,583 tons for Coke and Anthracite Iron and 20,276 tons for Charcoal Iron, or hardly two days' supply for the former.

The scarcity of raw material, intermediate products and finished Iron and Steel continues, and there are reports of foundries and mills closing down on that account. Yet, for distant delivery there is no disposition on the part of buyers to contract at anywhere near present prices for prompt Iron.

In the South we have a curious spectacle in a disagreement among the associated makers of Pig Iron. Some of them have decided to abandon the position of trying to keep the market steady by quoting $12 for future deliveries when Iron is selling at $15, $16 or more for No. 2, at Birmingham, for prompt delivery. The makers have always excepted the Eastern territory from the agreement and only a few weeks since opened the Pittsburgh district. It is estimated that the furnace companies in the group have upward of 200,000 tons available for sale for the balance of this year. The effort is now being made by some of the furnace companies to market the Iron at or near present prices. Judging from the tonnage taken by the Eastern and Pittsburgh districts, consumers are not expected by well informed authorities to take much of it at the present time for delivery late in the year at the prevailing scale of prices for prompt Iron.

There have been few noteworthy transactions in Pig Iron. One leading Open Hearth plant in Eastern Pennsylvania appear to have purchased, during the past two weeks, close to 50,000 tons of Basic Pig, some of it from the Lehigh Valley and some from Virginia. The latest transactions were at $19 for earlier delivery and at $18.50 for the last months of the year.

Importations continue. Some round sales have been made of foreign Ferro, the production in this country now being small. There have also been sales of Billets and Sheet Bars, aggregating about 10,000 tons, the greater part for the Central West. The price for Billets is $30 to $30.50, ex-ship.

Quite a good deal of structural work is still coming up. Among the recent contracts are two buildings in Philadelphia, involving 13,000 tons together and two in New York calling for about 8000 tons. Chicago, too, shows a good deal of activity.

The Eastern Iron trade is embarrassed somewhat by the strikes in the Lebanon district and at Reading. The anthracite coal strike may cause some blowing out of furnaces in the Lehigh and Schuylkill Valleys.

An interesting transaction in the Rail trade is the sale of 10,000 tons of 100-pound Rails for the subway, almost entirely for 1903 delivery.

A Comparison of Prices.

At date, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	May 14, 1902.	May 7, 1902.	Apr. 16, 1902.	May 15, 1901.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	$19.75	$19.75	$19.75	$15.25
Foundry Pig No. 2, Southern, Cincinnati	**18.75**	17.75	17.25	13.75
Foundry Pig No. 2, Local Chicago	**21.00**	20.00	18.50	15.50
Bessemer Pig, Pittsburgh	**21.00**	20.75	19.25	16.25
Gray Forge, Pittsburgh	**19.75**	19.75	18.75	14.75
Lake Superior Charcoal, Chicago	**23.00**	22.50	21.50	18.00
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	32.00	33.00	31.00	24.00
Steel Billets, Philadelphia	**33.50**	33.50	32.50	26.20
Steel Billets, Chicago	....	....	....	....
Wire Rods, Pittsburgh	**37.00**	37.00	36.50	39.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
Spikes, Tidewater	2.00	2.00	2.00	1.80
Splice Bars, Tidewater	1.60	1.60	1.60	1.40
OLD MATERIAL:				
O. Steel Rails, Chicago	17.50	17.50	17.50	13.50
O. Steel Rails, Philadelphia	*21.00*	21.00	22.00	16.75
O. Iron Rails, Chicago	24.00	24.00	24.00	19.00
O. Iron Rails, Philadelphia	*24.00*	26.00	25.00	19.50
O. Car Wheels, Chicago	**20.00**	20.00	19.00	16.50
O. Car Wheels, Philadelphia	**19.50**	19.50	17.75	17.50
Heavy Steel Scrap, Chicago	**17.50**	17.50	16.50	13.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**1.95**	1.92	1.92	1.50
Common Iron Bars, Chicago	1.90	1.90	1.90	1.55
Common Iron Bars, Pittsburgh	1.80	1.80	1.80	1.45
Steel Bars, Tidewater	1.80	1.80	1.80	1.62½
Steel Bars, Pittsburgh	1.60	1.60	1.60	1.45
Tank Plates, Tidewater	**1.95**	1.95	1.85	1.80
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	2.00	2.00	1.95	1.75
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	2.00	2.00	1.85	1.75
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Iron, Pittsburgh	**2.25**	2.25	2.00	1.75
Skelp, Sheared Iron, Pittsburgh	**2.25**	2.15	2.10	1.85
Sheets, No. 27, Pittsburgh	*2.95*	3.00	3.00	3.20
Barb Wire, f.o.b. Pittsburgh	2.90	2.90	2.90	2.90
Wire Nails, f.o.b. Pittsburgh	2.05	2.05	2.05	2.30
Cut Nails, Mill	2.05	2.05	1.95	2.00
METALS:				
Copper, New York	12.12½	11.87½	12.12	17.00
Spelter, St. Louis	*4.15*	4.12	4.17	....
Lead, New York	4.10	4.10	4.10	4.37½
Lead, St. Louis	4.00	4.00	4.00	....
Tin, New York	**29.90**	28.25	28.00	26.10
Antimony, Hallett, New York	8.00	8.00	8.00	8.75
Nickel, New York	50.00	50.00	50.00	60.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.19

Chicago.

FISHER BUILDING, May 14, 1902.—(*By Telegraph.*)

One feature of the week has been the active demand and increased tonnage placed for Rails and other railway materials. Several trunk lines are in the market for supplies for 1903, and one Southern road is endeavoring to place a contract for 10,000 tons of Rails for delivery during the last half of this year. The sales of both Heavy and Light Sections consummated during the week will aggregate about 15,000 tons for both early and late delivery. Details will be found elsewhere. There has also been an active demand for foreign Rails, but only relatively small contracts have been closed. The demand for Billets, both foreign and domestic, has continued unabated and Structural Material is pressingly wanted, business being restricted only by the inability of the mills to make necessary deliveries. It is significant that the mills, as well as consumers, anticipate heavy importations during the summer and fall, not only of Billets and Rails, but of all kinds of Structural Material. But while business in foreign material is pending no large transactions have come to the surface this week. The Pig Iron situation has improved in that there has been a less unsettled feeling with prices steadier, although higher for Northern makes and some special grades of Southern Iron. The volume of business has been materially increased, the deliveries being main-

ly for the last quarter of this year. Spot Iron has been more difficult to obtain, and where available has been held at prices which are relatively prohibitive. One point of interest has been the diversion of Coke shipments to the Anthracite field, where anticipations of the strike caused a demand for Coke. This section has been quite easy from a fuel standpoint the past two weeks.

Pig Iron.—There has been an increased volume of business in Pig Iron during the week, and the market has developed a steadier tone, prices being less unsettled, and the variation within relatively narrow limits. Sales in this market have been mainly of Northern Iron; two lots of 1000 tons each for delivery during the last quarter of the year being the largest individual contracts, but another transaction, involving 1500 tons, is pending. As a rule, sales have been confined to small lots from carloads to several hundred tons, but in the aggregate the tonnage has been considerable, considering the difficulty in placing any contracts. Sales for immediate delivery, however, have been rare, the little Iron offering being held at prices which have been practically prohibitive. Compared with prices current a week ago there has been an advance of about $1 per ton on Northern Iron and 50c. to $1 per ton on special makes of Southern Iron. There is still much difficulty, however, in giving prices which may be a criterion for the whole market, as it has been well said that each furnace is a law to itself at the present time. There has been a relatively increased demand for Charcoal and other strong Irons to meet the demand from manufacturers of high grade Castings. Charcoal Iron, however, is very scarce, it being almost impossible to place orders of moment, either for Lake Superior or Southern makes, while the output of the old furnaces in the Hanging Rock region is too small to be an important factor in the market. The market is very sensitive, reflecting quickly any labor difficulty. Should the strike in the Anthracite Coal region be continued it cannot but have a strong influence on the West as well as the Eastern markets. Already sales of Coke have been made by the West to Eastern furnaces. The banking of furnace fires and the shutting down of mills and foundries will be a natural sequence where the melters of Iron are dependent on Anthracite Coal, at least until a shift can be made. We quote as follows:

Lake Superior Charcoal	$23.00 to $24.00
Local Coke Foundry, No. 1	22.00 to 22.50
Local Coke Foundry, No. 2	21.00 to 21.50
Local Coke Foundry, No. 3	20.50 to 21.00
Local Scotch, No. 1	22.00 to 23.00
Ohio Strong Softeners, No. 1	24.00 to 24.50
Southern Silvery, according to Silicon.	20.40 to 20.90
Southern Coke, No. 1	19.65 to 20.65
Southern Coke, No. 2	19.15 to 20.15
Southern Coke, No. 3	18.65 to 19.15
Southern Coke, No. 1 Soft	19.90 to 20.65
Southern Coke, No. 2 Soft	19.15 to 19.90
Foundry Forge	18.15 to 18.65
Southern Gray Forge	18.15 to 18.65
Southern Mottled	18.15 to 18.65
Southern Charcoal Softeners, according to Silicon	18.65 to 19.15
Tennessee Silicon Pig	21.65 to 22.15
Alabama and Georgia Car Wheel	22.65 to 23.15
Malleable Bessemer	22.00 to 22.50
Standard Bessemer	20.00 to 20.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon	22.60 to 23.60

Bars.—An easier tone has prevailed for Bar Iron, with only a moderate amount of business transacted even in small amounts from store. The relatively high prices prevailing for Iron have thrown consumption more largely upon Steel. The mills have taken such business as has been offered on the basis of 1.85c. to 1.90c. for mill shipments, while orders from store have continued to be filled on the basis of 2.25c., full extras, Chicago. There have been no large contracts for Steel Bars, but there has been a fair run of orders, which, in the aggregate, have amounted to considerable, some mills in fact having already booked during May more tonnage than during the whole of April. Prices for mill shipment have continued firm at 1.75c. to 1.90c. for Soft Steel Bars, 2.15c. to 2.25c. for Hoops, and 2.25c. for Angles, base. The jobbing demand from store has continued active, with full prices readily obtained for Angles, Bars and Hoops. Soft Steel Bars are quoted at 2c. to 2.25c.; Angles, 2.25c., and Hoops, 2.50c., base, from store.

Skelp.—There has been a fair demand and a steady market, with sales of two lots of 2000 tons each on the basis of 2.15c. to 2.25c., mill shipment.

Structural Material.—The volume of business has been restricted only by the inability of the mills to make desired deliveries. The aggregate tonnage for the week has been liberal, although no very large individual contracts have been placed. Several lots of Channels and Beams of 1000 to 2000 tons each have been placed for laté delivery, but the large contract involving from 20,000 to 30,000 tons is still held in abeyance because the time of delivery promised is unsatisfactory. This business is still pending, however. It was reported that the contract for the First National Bank Building, to be erected at Dearborn and Monroe streets, calling for 12,000 to 14,000 tons, had been placed during the week. It develops, however, that this business was taken by an Eastern mill some time since. The 17-story building to be erected at the corner of State and Madison streets, calling for between 3000 and 4000 tons of Structural Material, is expected to be placed in the near future. Considerable business in foreign Structural Shapes is pending, but if the contracts have been placed they have not come to the surface. There has been considerable activity in small lots of domestic material from store, upon which high premiums are readily obtained. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c. Small lots of Beams and Channels from local yards are quoted at 2.50c. to 3.50c.; Angles, 2.50c. to 3.50c. rates; Tees, 2.55c. to 3.50c. rates.

Plates.—A firmer and more confident tone has prevailed with an increased volume of business transacted, and local sellers are demanding and obtaining 10c. advance on the inside price on mill shipments. This advance possibly is in anticipation of the action of the mills, which, it is reported, will meet in New York soon to take action on prices. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.85c. to 1.90c.; Flange, 1.95c. to 2c., and Marine, 2.15c. to 2.25c. From store the following prices are current: ¼-inch and heavier Tank Steel, 2.10c.; No. 8 Tank Steel, 2.25c., and Flange Steel, 2.35c., all f.o.b. warehouse, Chicago.

Sheets.—Less demand has been experienced for Light Sheets, there being an absence of large sales and even less movement in jobbing lots. Mill shipments of No. 27 Black Sheets are quoted at 3.15c. to 3.25c., Chicago, and small lots from store at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, mill shipments being held on the basis of 4.35c. to 4.50c., Chicago, and small lots from store at 4.70c. to 4.75c. for No. 27.

Cast Pipe.—No large municipal contracts have been placed during the week and there has been no special activity in the trade otherwise, yet there has been a fair volume of business in the aggregate, there being considerable inquiry from both water and gas companies, with moderate sales. Prices have been advanced $1 per ton in sympathy with the sharp advance in Pig Iron. Cast Iron Water Pipe is now quoted by manufacturers as follows: 4-inch, $31; 6-inch, $30; 8-inch and larger, $29; Gas Pipe, $1 per ton higher, f.o.b. Chicago.

Merchant Pipe.—A steady market with a moderate movement has been the record of the week and prices have remained without essential change. Carload lots are quoted as follows, random lengths: Black, ⅛ to ½ inch, 56½ off; ¾ to 12 inches, 63½ off; Galvanized, ⅛ to ½ inch, 43½ off; ¾ to 12 inches, 50½ off.

Boiler Tubes.—The market has been without special animation, but there has been a fair volume of business in the aggregate, with prices as previously quoted. Quotations are as follows:

	Steel.	Iron.
1 to 1¼ inches	35	35
1¾ to 2¼ inches	50	32½
2½ inches	50	35
2¾ to 5 inches	57½	42½
6 to 13 inches	52½	..

Merchant Steel.—There has been an absence of large contracts, but a fair volume of business and a

strong one have continued to characterize the market, and prices have remained unchanged. Mill shipments are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.95c. to 2.10c.; Open Hearth Spring Steel, 2.45c. to 2.55c.; Toe Calk, 2.25c. to 2.40c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 50 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted at 7c. for mill shipments; specials, 12c. upward.

Rails and Track Supplies.—Several trunk lines are in the market to place next year's contracts, but as yet no heavy orders have been booked. One Southern railroad is seeking to purchase 10,000 tons for delivery this year, and the transaction is still pending. There have been sales, however, of 2000, 1500 and 400 tons of Heavy Sections for December delivery on the basis of $28 at the mills, while four or five lots of second-quality Rails, Heavy Sections, aggregating upward of 5000 tons, have been sold at about $27 for delivery during the last quarter of the current year. The demand for Light Sections has been exceptionally heavy, and in the aggregate the tonnage placed has been heavy, although few individual orders have exceeded 100 tons. Direct sales have been made on the basis of $33 to $38, mill shipment, for nearby delivery. A liberal volume of business has been done in resales of Light Sections at a considerable premium over mill prices, sales being made in lots of from 10 to 50 tons each; all told there are about 3000 tons available for prompt delivery. Inquiries are in the market for 2000 tons of Heavy Sections to be shipped to the Pacific Coast, and 200 tons are said to have been sold for shipment to Honolulu. There is considerable business in sight for foreign Rails, but up to the present time the only actual transaction that has come to the surface is the sale of 800 tons of 60-lb. Rails to be shipped from Antwerp to San Pedro, Cal., at $42, delivered, duty paid. There have been some interesting movements in Relaying Rails; for particulars, see Old Material. Track Supplies continue in active demand and a firm tone has continued to prevail. Fastenings are quoted as follows in carload lots: Splice Bars or Angle Bars, 2c.; Spikes, 2.30c. to 2.40c.; Track Bolts, with Hexagon Nuts, 2.85c. to 3.10c.; Square Nuts, 2.70c. to 2.95c.

Billets.—There has been an active demand for domestic Billets for almost any delivery during the year, but business has been restricted to moderate amounts, the mills being so well sold ahead that it is only an exceptional case that orders are accepted. There is an active demand for foreign Billets and some business of moment is pending. Large importations are expected during the summer and fall, but no contracts of moment are reported which have been closed in Chicago during the week. Domestic Open Hearth Billets are salable at $36 to $42, Chicago, according to the urgency of the buyer and time of delivery.

Old Materials.—The railroads which have obtained supplies of new Rails through orders placed some months since have been offering quite a considerable amount of both Relaying and Rerolling Rails, the high prices which have recently prevailed bringing a considerable tonnage into the market, which has resulted in lower prices. Early in the week sales were made at $31; later 5000 tons of 60-lb. Rails were offered at $30, while at the close 2500 tons sold at $29, spot; 1000 tons Relaying Rails, Heavy Sections, sold at $42, delivered on Pacific Coast. Rerolling Long Lengths would be difficult to sell at over $22 to $23 at the close. A unique transaction, interesting more than important, has been the sale of 1500 tons of 56-lb. Canadian Relaying Rails, said to have been on the basis of $26.50 delivered at the United States boundary line for shipment in bond to Mexico. The whole of the market for Scrap sympathizes somewhat with Rails, but prices are better maintained because of the strong market for Pig Iron and the unsettled labor outlook. The following are the approximate quotations per gross ton:

Old Iron Rails	$24.00 to $25.00
Old Steel Rails, mixed lengths	17.50 to 18.00
Old Steel Rails, long lengths	22.00 to 23.00
Heavy Relaying Rails	29.00 to 30.00
Old Car Wheels	20.00 to 20.50
Heavy Melting Steel Scrap	17.50 to 18.00
Mixed Steel	15.50 to 16.00

The following quotations are per net ton:

Iron Fish Plates	$22.00 to $22.50
Iron Car Axles	24.00 to 24.50
Steel Car Axles	21.50 to 22.00
No. 1 Railroad Wrought	20.00 to 21.00
No. 2 Railroad Wrought	18.00 to 19.00
Shafting	18.50 to 19.00
No. 1 Dealers' Forge	16.00 to 16.50
No. 1 Busheling and Wrought Pipe	13.50 to 14.00
Iron Axle Turnings	13.50 to 14.00
Soft Steel Axle Turnings	13.50 to 14.00
Machine Shop Turnings	13.00 to 13.50
Cast Borings	9.00 to 9.25
Mixed Borings, &c	9.50 to 10.00
No. 1 Boilers, cut	13.00 to 13.50
Heavy Cast Scrap	14.50 to 15.00
Stove Plate and Light Cast Scrap	11.00 to 11.50
Railroad Malleable	16.00 to 16.50
Agricultural Malleable	14.00 to 14.50

Metals.—There has been a steadier market for Copper with a moderate amount of business, Lake selling at 13c. in carload lots. Pig Lead has also been a little firmer in tone, with a fair order trade at 4.05c. for Desilverized in 50-ton lots and 4.07½c. to 4.10c. for carload lots. Selling prices on small lots of Old Metal are as follows: Heavy Cut Copper, 11½c.; Red Brass, 11¼c.; Copper Bottoms, 10¼c.; Pipe Lead, 3.90c.; Zinc, 3.20c.

Coke.—There has been an ample supply in this market, although there has been a fair demand and prices have remained steady. At the close of the week, however, there was a more active market, with a demand from the Anthracite Coal region, where the strike is in progress, and shipments destined to this market have been diverted. From Indiana and Ohio come reports of an urgent demand and some reshipments have been made from this point. Standard 72-hour Connellsville Foundry Coke is selling at $5.25 to $5.50 and Virginia and West Virginia at $5 to $5.50 per ton, Chicago.

C. A. Stevenson Company, St. Louis, Mo., dealers in Pig Iron and Coke, have established a local agency with offices in the Fisher Building, rooms 1200 and 1201. A. B. Stevenson is the Chicago representative.

Philadelphia.

FORREST BUILDING, May 13, 1902.

The situation in the Iron and Steel trades is becoming more complicated than ever. It is absolutely impossible to say where the market stands, or which way it is going. There are more sellers than for some time past, yet there is less available material than ever. Lower prices are quoted, yet nothing can be got hold of without paying an advance. This is literally a correct statement, and while of course some explanation can be given, yet at best it cannot be regarded as satisfactory. The assertion that there is less available material is confirmed by the fact that quite a number of foundries are shut down because they have and can get no Iron. Others are preparing to shut down, for the reason that material due them and promised from time to time, is so uncertain in regard to the date when it will be delivered, that a shut down is by no means improbable. Lower prices are quoted, but the stuff is not here, and so long as that continues consumers have to pay more money unless they are prepared to stop work. The lower prices are for foreign material, but purchases made some time ago and which were for deliveries during April and May, have proved to be as much overdue as home products have been, so that lower prices have no great significance under such conditions as we have named. There is certainly a great and increasing scarcity of both Pig Iron and its products in all the various lines, with no more prospect of early relief than there has been for months past. In a general way the demand would probably not appear to be as large as it is, if the usual reserves were being carried, but with nothing to fall back upon and everything taken almost red rot from the furnaces, present appearances are naturally very famine like. There is not as much new work being given out, however, and it is not improbable that the highest limit of trade expansion has been reached. It may be some time yet before any distinct reaction is manifested, but there are certain premonitions which may be worth watching. The Government crop report issued this morning is not calculated to inspire much bullishness, while the frequent little flurries

in the money market indicate very sensitive conditions. They may not develop anything serious, but the people in that devastated, desolate island in the West Indies thought the same thing a week ago. This is no doubt an extreme case, but close watching in times like these is fully warranted.

Pig Iron.—The scarcity of metal for prompt delivery appears to be as great as at any time during the year. It is hardly necessary to repeat the difficulties in detail, as the trade has had enough experience by this time to know all about it. Considerable relief has been expected by the arrival of foreign Iron, but so far the deliveries have been very small and very much behind time. Consumers are living in hope, however, and more substantial relief is looked for almost daily. Meanwhile there is a good deal of skirmishing around to get something to go on with, and in such cases when the material can be had prices are anything from $20.50 to $21 for No. 2 X Foundry, and even higher than that in some cases. It is a market in which prices have to be "made to order," and depend entirely on what is wanted, and when it can be delivered. The quantities taken are not large, simply because large quantities cannot be had for prompt shipment, and long dates are not wanted at the high prices now prevailing, the result being a hand-to-mouth demand at the highest prices realized since even date of 1900. Prospects are not distinct enough to warrant predictions in regard to the course of prices in the near future, but the chances are that they will not vary very much from those of to-day, which are about as follows for deliveries extending over the last half of the year. More money has to be paid for May and June shipments, as the scarcity is very great, and not likely to be overcome for many weeks to come; and it may be two or three months before normal conditions are reached. Basic Iron has been sold at $19 for prompt shipments and $18.50 for the last four months of 1902. In a general way quotations are about as follows for Philadelphia and nearby points, with 50c. to 75c. additional for May, June and July shipments:

No. 1 X Foundry	$20.50 to $21.50
No. 2 X Foundry	19.75 to 20.50
No. 2, Plain	19.25 to 19.75
Standard Gray Forge	18.25 to 18.50
Ordinary Gray Gorge	17.75 to 18.00
Basic	19.00 to 19.50

Billets.—The Steel situation is very peculiar. American Steel is not to be had unless by chance a little order can be slipped in. English Steel is about on a parity in prices with American, but German can be done at an equivalent of about $30 to $30.50 (duty included), but it has to be taken in bond, and so far the deliveries have not been very prompt, so that buyers fight rather shy, although the price is attractive, and reports in regard to quality are entirely satisfactory. Sales to the extent of 6000 tons are reported at the price above named. American Steel nominal at $33.50 to $35.

Plates.—The demand has been large enough to warrant manufacturers in advancing their prices. This is independent action on the part of the local mills, but they find plenty of buyers at 2c., at mill, and are, therefore, getting that figure in most cases, and if the order is not placed they are just as well satisfied. There is plenty of work on the books and more offered than can be managed, unless subject to more or less uncertainty in regard to deliveries. Actual selling prices are about as follows: ¼-inch and thicker, 1.95c. to 2.05c.; Universals, 1.95c. to 2.05c.; Flange, 2c. to 2.20c.; Fire Box, 2.25c. to 2.30c.; Marine, 2.30c. to 2.35c.; Charcoal Plates: C.H. No. 1, 2½c.; C.H. No. 1 Flange, 3c.; C.H. No. 1 Flange Fire Box, 3½c.

Structural Material.—Mills are getting further behind than ever and much anxiety is manifested in regard to deliveries. A considerable amount of business has been placed in Europe, but shipments are overdue and very disappointing. Prices are nominally as follows, but actual figures when business can be placed are liable to be several dollars per ton more than the official quotations—viz.: Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.; Angles, 1.75c. to 1.85c. Store prices for immediate deliveries are about 2.40c. to 2.60c. for imported Angles.

Bars.—The lockout at the mills around Harrisburg and Reading has become more general during the past few days, so that prices of Bars are very firm and orders for large lots hard to place. Nominal prices are 1.92c., but it would be difficult to place orders at less than 2c., and even then there is no certainty in regard to deliveries. Prices are therefore difficult to quote with exactness, but 1.95c. to 2.05c. for Iron Bars and 1.80c. to 1.90c. for Steel would probably be a fair average at this writing.

Sheets.—The demand is quite satisfactory and prices are firm and unchanged, as last quoted, for carload lots and upward of best Sheets (and a tenth less for common qualities) about as follows: No. 10, 2.10c. to 2.20c.; No. 14, 2.40c.; Nos. 16 and 17, 2.80c.; Nos. 18-21, 3c.; Nos. 26, 27, 3.10c.; No. 28, 3.20c.

Old Material.—The market is very irregular and in consequence of the lockout there is a better supply temporarily. A great deal of material is also said to be afloat for this port, so that holders are not as firm as they were a week or two ago. Steel is scarce and strong, however, bids and offers for deliveries in buyers' yards being about as follows: Low Phosphorus Scrap, $25 to $26; Heavy Melting Steel, $21 to $22; Steel Rails, short lengths, $21 to $22; Choice Railroad Scrap, $24 to $25; No. 1 Yard Scrap, $20 to $21; No. 2 Light Forge, $17 to $18; No. 2 Light, old, $15 to $16; Machinery Cast, $17.50 to $18; Iron Rails, $24 to $25; Old Car Wheels, $19.50 to $20.50; Iron Axles, $27 to $28; Steel Axles, $25 to $26; Wrought Turnings, $16 to $17; Cast Borings, $10.25 to $10.50.

St. Louis.

CHEMICAL BUILDING, May 14, 1902.—(*By Telegraph.*)

Pig Iron.—A very quiet order of conditions rules in the Pig Iron market and while scattering sales are being made the present demand is neither heavy nor urgent. But for the limited amount of material that is in the hands of the sales departments at this time there is a ready demand at good round figures. It is gained from reports we receive that many producers are now able to ship forward more regularly and promptly the Iron under contract, and this relieves the buyer from having to come into the open market and pick up Iron here and there to tide him over between regular shipments, which has been quite the general rule for some time past. A considerable volume of buying is looked to come into the market to cover requirements for the last half, and the position of the furnaces to supply this demand is a topic much discussed in the trade circles. We hear of sales in lots of 100 to 500 tons for immediate and 60 and 90 day deliveries on basis of $15.50 and $15.75, Birmingham, for No. 2 Foundry. The following is about the range of prices for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$19.25 to $19.50
Southern, No. 2 Foundry	18.50 to 18.75
Southern, No. 3 Foundry	18.00 to 18.25
Southern, No. 4 Foundry	17.50 to 17.75
No. 1 Soft	19.00 to 19.25
No. 2 Soft	18.50 to 18.75
Gray Forge	17.50 to 17.75
Southern Car Wheel Iron	22.50 to 24.00
Malleable Bessemer	21.50 to 23.00
Ohio Silvery (8 per cent. Silicon)	.... to 22.00
Ohio Strong Softener, No. 1	21.50 to 23.00
Ohio Strong Softener, No. 2	21.00 to 23.00

Bars.—Volume of demand and inquiry in the market for Iron and Steel Bars is said by the mills to be large and the jobbers at this point have a very fair trade to supply at this time. We quote from the mills: Iron Bars at 1.90c.; Steel Bars at 1.90c. to 2c. Jobbers quote Iron Bars at 2.25c.; Steel Bars at 2.25c., full extras.

Rails and Track Supplies.—A heavy demand and inquiry continue to be the report current in the market for materials of this class and in the matter of prices we can note no change. We quote: Splice Bars at 2.10c. to 2.15c.; Bolts, Square Nuts, 3c. to 3.10c.; with Hexagon Nuts, 3.25c. to 3.30c.; Spikes, 2.35c. to 2.45c.

Angles and Channels.—A fair demand is said to exist in the jobbing trade for Small Angles and Channels, and 2.50c., base, continues as the quotation for material of this class.

Sheets.—The demand is good for Sheets of different

grades and sizes. In the matter of prices jobbers continue to quote Stove Pipe size, No. 27, at 3.60c. to 3.65c.

Pig Lead.—Dullness is the rule in the Lead market for the week under review and the movement of prices is within narrow limits. Chemical at 3.97½c. and Desilverized at 4c.

Spelter.—The demand of the consumer of Spelter is light and the market is, therefore, in a dull condition. Prices, we hear, are 4.12½c. to 4.15c.

Cincinnati.

FIFTH AND MAIN STS., May 14, 1902.—*(By Telegraph.)*

Word has finally been received in Cincinnati that the $12 agreement among the Southern furnaces was rescinded and the association disbanded on May 1. The matter was kept quiet, however, until last Saturday, when the agencies here which represent the associated furnaces were notified of that fact. It is believed that the leading Southern interest are already so well sold up as to be out of the market for the next three months, but a number of the other furnaces have opened their hands to a considerable extent and revealed the fact that there is still quite a little lot of unsold Iron for delivery, beginning with this month. This Iron has been put on the market and is selling freely on the basis of $16 to $16.50, Birmingham, for No. 2 Foundry, for delivery beginning with July. While a few of the furnaces may not be asking a bonus for May and June deliveries, yet most of them are asking and getting $16.50 to $17 for the same grade of Iron. As to the actual condition of buyers, the opinion varies considerably, some yet holding to the belief that there is a material shortage and the comparatively little Iron now thrown upon the market will not be sufficient to supply the demand. Another opinion, which, by the way, appears to be the prevailing one, is that buyers, as a rule, are pretty well cared for, and that the Iron now in sight will not leave very much of an actual shortage when all things come to be reckoned up. There is a decidedly better feeling, on the whole, and with better weather and better success in the South the furnaces are producing more Iron than they did some months back, and are gradually gaining on their delinquent orders. It is thought that the situation will continue to show improvement until at the end of 90 days from now the deliveries will be pretty nearly abreast of the demand. The situation in both Northern and Southern districts is an exceedingly strong one, and while Iron may go somewhat higher, the general feeling is that it is now somewhere near the limit of this advance, though it is also pointed out that there is nothing in the entire market to lead one to look for lower prices for months to come. Forge Irons are stronger and more scarce than any other grades. As an illustration of the situation, a lot of 700 tons of Mottled Iron was sold yesterday in Pittsburgh by a Cincinnati house on the basis of $18, Birmingham. This was spot Iron, the purchaser refusing to duplicate the order for delivery 60 to 90 days hence. Northern Irons are also higher. Freight rate from Hanging Rock district is $1.10, and from Birmingham $2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$19.25 to $19.75
Southern Coke, No. 2	18.75 to 19.25
Southern Coke, No. 3	18.25 to 18.75
Southern Coke, No. 4	17.75 to 18.75
Southern Coke, No. 1 Soft	19.25 to 19.75
Southern Coke, No. 2 Soft	18.75 to 19.25
Southern Coke, Gray Forge	17.75 to 18.75
Southern Coke, Mottled	17.75 to 18.75
Ohio Silvery, No. 1	21.85 to 22.35
Ohio Silvery, No. 2	21.35 to 21.85
Lake Superior Coke, No. 1	22.35 to 23.10
Lake Superior Coke, No. 2	21.35 to 22.10
Lake Superior Coke, No. 3	20.35 to 21.35
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel, chilling grades	$23.00 to $23.75
Standard Southern Car Wheel, No. 2	22.50 to 23.00
Lake Superior Car Wheel and Malleable	22.00 to 23.00

Old Material.—There is no change in the general situation. The market is strong and active. We quote dealers' buying prices, f.o.b. Cincinnati, as follows, No. 1 Wrought and Iron Axles per net tons, others gross tons: No. 1 Wrought Railroad Scrap, $18.50 to $19; Iron Axles, $25 to $25.50; Steel Rails, rolling mill lengths, $24 to $24.25; same, short lengths, $17 to $17.50; Car Wheels, $19 to $19.50; Cast Machine Scrap, $14.

Birmingham.

BIRMINGHAM, ALA., May 12, 1902.

The monotony in the market conditions of Iron still continues, but the prospects for a change look promising at this writing. One of the leading interests announce that they have finally sighted the port of comfort as regards old business, and will this week tie up at the receiving wharf for new business and again load up for the monthly ports of delivery. The bare announcement of this fact will brighten the outlook and lessen the anxiety of those buyers who are at sea as to source of their supply. To the above announcement can be added the fact that a recently built furnace of large capacity for this district will probably be making Iron when this letter appears. They may not be in the market for a while, as they will have their own necessities to supply first. Both interests dread the flood of inquiries that would follow publicity of name, and for the present they are each "incog." An important point is the price at which Iron will be offered. On this point no definite information could be obtained, though earnest efforts were made in that direction. Your correspondent feels confident that the market price will be followed and that there will be no attempt to control it. The Iron will be sold for what it will bring. The demand for prompt Iron was fair—in magnitude larger than supply—and very varying in price. One lot of Iron (not Birmingham) was quoted as sold at $17.10, Birmingham, basis for No. 2 Foundry, and assurance was given of ability to place Birmingham Iron on that basis. Some No. 2 Foundry was sold at $16.75 and some No. 3 Foundry at $16.50. Gray Forge went at $15 to $15.25. From one creditable source one sale of No. 1 Soft is reported at $20. The irregularity in prices is partly due to the results obtained by experimental mixology. Let it be understood that above quotations are for prompt shipment and for small lots. For the last half and last quarter of the year, the market is about on the basis of $16 for No. 2 Foundry. On that basis sales were made. To prove the necessitous condition of some buyers it is cited that Iron shipped to Rotterdam, a considerable time back, has been repurchased by American buyers and shipped back to this country. The statement in last week's letter that the Gadsden Furnace was undergoing reconstruction was premature. It is getting in trim for the metamorphosis and will go out of blast as soon as preparations are completed. The furnace at Tuscaloosa of the Central Foundry Company will have ten cars of material shipped to it this week and will probably be completed before the snow flies. The other furnaces to be erected, of which mention has been made, are being pushed right along, but the projectors have padlocked their mouths and thrown away the key. They are not ready for publicity. It can truthfully be said, though, that they are not permitting any grass to grow under their feet in their preparations for the work.

In the Pipe industry business continues fine, and they have all they can care for at the present time. Another Pipe company were incorporated the past week by W. J. Long, T. Y. Hoffman and H. C. Mead under the title of The American Sewer Pipe Company. They are capitalized at $100,000, and their home will be at Bessemer. They will make Cast Iron Pipe, Hydrants, Valves, Car Wheels, Switches, &c. The Southern Sewer Pipe Company have located at North Birmingham, as previously intimated.

The situation as to Coke is still unsatisfactory. There were local sales at $3.50 to $3.75 at ovens, while outside Coke costs yet $4.50, $4.75 and $5, delivered. The only relief is in increase of ovens. Their present capacity is less than demand.

There is some stir in Coal lands. One property known as the Hoene Mines, situated near Warrior, in this county, changed hands the past week, the consideration being $35,000. Parties largely interested in the Stout Mountain Coal mines have purchased several thousand acres of contiguous Coal lands and will develop them soon as can get to work. The outlook for successful results is said to be very promising. Besides these another company are being formed to take over a larger body of Coal lands in Walker County. One re-

port is 20,000 acres, while another makes it 100,000 acres. The company will be composed of local and New York talent. The past week has been spent in going over the property, and your correspondent is now informed that the deal is an accomplished fact. Further than that the property will be at once developed cannot as yet be learned. After the papers are signed we will hear of particulars.

We are at that season of the year when strikes are usually born, and we have an unsettled difference between the Carpenters' Guild and the contractors and builders. The difference is slight, but each side sees right on only its side. The carpenters are "off" and the plasterers are encouraging them by a sympathetic strike, and it is whispered that other trades will join in to force the employers to terms. There is very little being said of demands of other classes of labor and trades that may be made later on at their annual conventions, and it is well to not cross a bridge until you get to it.

Pittsburgh.

(By Telegraph.)

PARK BUILDING, May 14, 1902.

Pig Iron.—The scarcity of Pig Iron shows no relief and many of the foundries and other plants are running short handed for want of metal. For the first time in the history of the American Iron trade the output of Pig Iron in one month has exceeded 1,500,000 tons. Stocks on May 1 were less than 85,000 tons. These figures show clearly that in spite of our enormous production of Pig Iron, actual consumption is in excess of it. Bessemer Pig Iron for shipment in the next three or four months is $21 at furnace. For shipment over last six months, $20.50, or perhaps lower might be done. Gray Forge is $19.75 to $20; No. 2 Foundry is $20.75 to $21, Pittsburgh, with some sellers asking higher prices.

Steel.—There is not much doing in domestic Steel, but a good deal of foreign is being offered. German Billets can be laid down in Pittsburgh at about $32 to $32.25. Domestic Billets are $32 to $33, with practically none being offered. Sheet Bars are $33 to $34, depending on point of delivery.

(By Mail.)

The Iron market is characterized by a great scarcity of Pig Iron, Billets, Muck Bar and Skelp. Premiums are being paid right along for early deliveries of these materials, and the fact that Pig Iron and Steel are so scarce is doing very much to sustain the market on Finished Iron and Steel. There is very little doing in either Pig Iron or Billets, as buyers are pretty well covered, and on the other hand there is very little Pig Iron or Steel to be had. A partial settlement has been made of some of the labor troubles in this district, the American Bridge Company having come to an agreement with their men on Monday. There is no denying the fact that demand for Finished Iron and Steel fell off a good deal in April and in this month as well, compared with February and March. This, however, is largely due to the fact that buyers are pretty well covered and are now specifying against contracts. It is true also that prices of material are high and there is not much incentive to buy ahead. The tone of the entire market is strong.

Muck Bar.—There is an active demand for Muck Bar, and the high price of Gray Forge Iron and its scarcity for prompt delivery have made prices on Muck Bar very firm and high. We quote the best grades of Muck Bar at $35 to $35.50, Pittsburgh. A sale of 3000 tons is reported on the basis of about $35, f.o.b. cars Pittsburgh. It is likely that some grades of Muck Bar, not so favorably known, might be had at a slightly lower price than $35.

Rails.—Some small lots of foreign Rails have been sold for delivery in this country. Some preliminary figuring is going on for Rails for next year, and indications are that the roads will place their contracts very early. We quote at $28, at mill, for Standard Sections.

Ferromanganese.—A good deal of foreign Ferro is coming into this market at $48 to $49 a ton. Domestic is scarce and practically none is being offered.

Spelter.—We quote best grades of Spelter at 4.27½c. to 4.30c., Pittsburgh.

Hoops and Bands.—We quote Hoops, Bessemer stock, at 1.90c. for 250-ton lots and over and 2c. in less quantities. Bands are 1.60c. for Bessemer stock, 12 gauge and heavier, with an advance of $2 for Open Hearth.

Plates.—No meeting of the Plate Association will be held this month, owing to inability of some of the leading members to be present. However, a meeting will probably be held on June 5 next. Tonnage in Plates is excellent, and the leading mills are filled up for the next four or five months. A large tonnage in Plates for delivery throughout the year has been sold by one of the mills at a considerable advance over the official price. In fact, most of the Eastern mills are quoting from $1 to $2 or $3 a ton over official price, which is 1.60c., Pittsburgh. The Western Plate mills are adhering very closely to the official price on desirable business, but small lots of Plates readily bring 1.70c., Pittsburgh, and higher. There is considerable agitation to advance the price of Plates, but this will likely be opposed by some of the leading mills, who insist upon pursuing a conservative policy in the matter of prices, believing that getting the market too high would be a mistake and possibly curtail demand, which is now very satisfactory. We quote Plates as follows: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra; No. 9, $5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days. Small lots of Plates from store are sold on the basis of 1.70c. to 1.75c. for Tank, with the usual advances for the higher grades.

Bars.—The mills rolling Iron and Steel Bars are extremely busy and have work ahead for some months. Demand is perhaps not so urgent as it was in February and March, but this is due to the fact that large consumers are covered by contracts and are now specifying against these very liberally. However, current business is fairly large and the market is very firm. Iron Bars are scarce for prompt shipment and have sold at an advance over the official price, which is 1.80c., Pittsburgh. The mills rolling Steel Bars have made a slight advance in prices on small lots. We quote Steel Bars at 1.60c., half extras, for carloads and larger lots, while small lots bring 1.70c. to 1.75c. All specifications for less than 2000 lbs. of a size are subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10c. per lb. extra. Quantities less than 1000 lbs., 0.30c. per lb. extra. The total weight of a size to determine the extra, regardless of length. We quote Iron Bars at 1.80c., Pittsburgh, extras as per National Bar Iron Card. We may note that for Refined Iron Bars, rolled from special stock, 2c. and higher is obtained.

Structural Material.—Tonnage continues heavy, and a good deal of business is being placed for delivery for next year. The McClintic-Marshall Construction Company have taken some work for the Pittsburgh & Lake Erie road, requiring about 700 tons. Other contracts for new foundry buildings in and about Pittsburgh have recently been placed, and the different bridge companies are very much crowded with work and away behind on contracts, owing to inability to get Shapes as fast as needed. The American Bridge Company have settled with the erectors in their employ in the Pittsburgh district on the basis of 47½c. per hour for an eight-hour day. Official prices are merely nominal, and prompt shipments of Beams and other Shapes bring 2½c. to 3c. a lb. The official prices are as follows: Beams and Channels, up to 15-inch, 1.60.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

Rods.—The scarcity of Steel and high prices for it have made Rods scarce for prompt shipment and they bring high prices. We quote Bessemer Rods at $37 to $38, depending on the order and how soon the buyer wants the Rods.

Sheets.—Demand for Black and Galvanized Sheets is not so large as it was some time ago, but the mills are comfortably filled. However, reasonably prompt deliveries of both Black and Galvanized can be had. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, for desirable orders, at 2.95c. to 3c., and No. 28 at 3.05c. to 3.10c. Small lots from store bring 3.15c. to 3.25c. for No. 28. Galvanized Sheets are somewhat quiet in demand, but the mills are pretty well filled up on old contracts. We quote at 70, 10 and 5 in carloads and 70 and 5 in small lots from store. All above prices are f.o.b. maker's mill.

Skelp.—There is a good demand for Skelp and prices are high. We quote Grooved and Sheared Iron Skelp at 2.25c., and note a sale of about 2000 tons of Grooved at that price. Grooved Steel Skelp is 2.25c., while higher prices are asked for Sheared.

Merchant Steel.—A fair amount of tonnage is being placed, but most of the large contracts are in and buyers are now specifying on these. The tone of the market is very firm. We quote: Tire Steel, 1.80c. to 2c.; Open Hearth Spring, 2.25c. to 2.50c.; Hammered Lay Steel, 3.75c. to 4c.; Cold Rolled and Cold Drawn Shafting, 50 per cent. off in carloads and 45 per cent. in less than carloads in basing territory; Tool Steel, 6½c. to 7c. for ordinary grades, 12c. and upward for special grades, all f.o.b. mill.

Merchant Pipe.—We note a continued heavy demand and the leading Pipe mills are pretty well filled up for the next three or four months. Some of the outside Pipe mills are having a good deal of difficulty in getting Skelp. Pittsburgh basing discounts for carloads are as follows:

Merchant Pipe.	Black. Per cent.	Galvd. Per cent.
⅛ to ½ inch, inclusive	60	48
¾ to 12 inch, inclusive	67	55

Boiler Tubes.—Demand is very heavy and the tone of the market is strong. Some of the mills are two or three months behind in deliveries of Tubes. Discounts for small lots are as follows:

Boiler Tubes.	Up to 22 feet. Per cent.
Steel.	
1 to 1½ inch, inclusive	45
2¾ inch to 5 inch, inclusive	63½
1¾ inch to 2½ inch and 6 inch to 13 inch, inclusive	58
Iron.	
1 inch to 1½ inch and 2½ inch	39
1¾ inch to 2¼ inch	38
2¾ inch to 13 inch	48

The mills quote lower prices than the above to the jobbing trade for large lots.

Coke.—The car supply last week was not as good as the week before, but the situation is much better in this respect than some time ago. Output of Coke in the Connellsville region is running 220,000 to 225,000 tons a month. Strictly Connellsville Furnace Coke is $2.25 and 72-hour Foundry is $2.75 to $3 a ton. Some of the Coke operators report their entire output of Coke as practically under contract for the balance of this year. Some Coke has also been sold for delivery in next year.

Scrap.—Demand for Scrap seems to be increasing, while the supply is growing less. Prices are high and parties who have Scrap to sell are very stiff in their ideas as to prices. Heavy Melting Stock for Bessemer and Open Hearth purposes is about $20, gross ton. Wrought Iron Scrap is about the same price per net ton.

A meeting of the bridge and structural manufacturers of the Pittsburgh district was held in that city on Tuesday, May 13. Among the companies represented were the Riter-Conley Mfg. Company, Columbia Bridge Company, McClintick-Marshall Construction Company and Fort Pitt Bridge Company. They decided to pay their men the same scale of wages as the American Bridge Company will pay—that is, 47½ cents per hour for an eight-hour day.

Cleveland.

CLEVELAND, OHIO, May 13, 1902.

Pig Iron.—The consumers of Pig Iron who have not covered their needs with contracts hitherto are having the most serious difficulty in getting any material whatever. The state of the market is best illustrated by an incident of Saturday, where one consumer wanted 100 tons of Foundry Iron for delivery during July and August. The contract was filled only this morning and was divided between two Southern furnaces, each taking a half of the contract after much persuading. The sale was made at $16.50, Birmingham, which means $20.20 for No. 2 delivered here. This indicates there is no Iron left among the Northern furnaces for immediate delivery and the reports are that the material will be extremely scarce during the remainder of the year. A few odd lots may show up now and then but not many. Valley Furnace Irons are quoted now at $22.50 for No. 1, delivered at Cleveland, and these prices apply on the small sales that are being made. The evidences are that all the Iron which has been sold on contract is being used, and in many instances the consumer has needs which exceed his original expectations. There has as yet been no indication that anyone who has a contract wishes to resell his Iron. The same condition prevails in the Bessemer grades. A Pittsburgh jobber went through the market during the week asking for Iron and offering $20 for Bessemer. He had sold all he could buy at $21 in the Pittsburgh district. No Iron was available in Cleveland at the price named. Basic producers are entirely off of the market, and having no Iron, they are making no quotations of prices. The inquiries for material continue to come in, but the stacks have none to sell. The Gray Forge Irons are now selling very well and seem to be the only grade in which there is any activity. The furnaces which have material for sale can obtain about their own prices for it. The continuation of the supply of those who have contracts and the relief of those who have no Iron depend entirely upon the speed of production maintained by the furnaces. The Coke supply is just a little off color. It is not such as to cause any letting down of production, but only sufficient to cause uneasiness among the producers.

Finished Material.—The Steel mills have turned their attention away from the possibilities of present sales, the scarcity of material being so prominent, and are devoting their energies to the trade for next year. This week some sales of Structural Steel were made in the Cleveland territory which entail deliveries past January 1. The other districts have reported sales of this material in advance, but the Cleveland market has shown nothing of the sort until now. The sales here of late have been quite heavy and are made at 1.70c., the same price as has prevailed on all former transactions. Aside from this it is now apparent that some of the contractors in this territory will have to wait upon the delivery of their material until next year, especially if the present demand keeps up and if the specifications on former contracts are so heavy as they now are. The indication in this is that there is no material for sale for this year and such a surmise is said to be permissible. On the future sales of Steel the big mills are adhering to the policy which has governed their actions since the present rush started. They are absolutely refusing to sell material to any who has a desire to use the purchases for speculative purposes. The mills do not want that sort of business, and are not only discouraging it but are absolutely refusing to make the sales. The demand for Plates is fairly good, and the price here has gone up $2 a ton, all quotations now being 1.80c., Cleveland. The jobbers have about sold out their contracts for the season and the material is getting scarce. The shortness of the material is more due to the lack of Steel than to any overselling, since the latter feature is not taken much stock in. In some instances it is known that the mills have eased up materially in the production of Sheared Plates, while Plate mills of all sorts are being turned to the production of other material. Sheets do not seem to be as much in demand as they might be and present the one weak feature of the market. With all of the other products

well sold up there is an abundance of Sheets for every requirement, and it looks as if the mills could stand a good many more orders. The one feature is the scarcity of Sheet Bars, which may change the aspect of the mills toward the market, but at present it seems as if the users of Sheets might take matters easy for a while and be reassured in being able to supply their demands when they will. Under the circumstances no further advances in prices are to be expected. The present quotations are 2.50c. on No. 10 as a basis on the gauges between 10 and 16, and 3.50c. to 3.60c. on No. 27 as a basis on the gauges between 17 and 28, one pass cold rolled, full cold rolled being quoted at 0.10c. extra. The demand for Bars keeps up, but the sales are light, because of the scarcity of material. It is virtually impossible to get any Bars for immediate shipment, and on the larger sizes shipments cannot be made inside of six months. The prices hold as they have been heretofore quoted at 1.80c., Pittsburgh, on Bar Iron; 1.60c., Pittsburgh, on Bessemer Steel Bars, and 1.70c., Pittsburgh, on Open Hearth Steel Bars. There is still some call for Rails, seconds mostly being the basis of the operations, but the sales are light owing to the scarcity of material. Electric line operations afford the market for the Rails.

Old Material.—The market this week has been quite active, with the demand sharp. The supply has increased steadily, and while there is still an apprehension of a break in prices it has not come so far, the following quotations being made: No. 1 Wrought, $19.50 net; Iron Rails, $27.50 gross; Iron Axles, $26 net; Cast Borings, $10 gross; Wrought Turnings, $15.25 gross; Cast Scrap, $15.50 net; Car Wheels, $19 gross; Heavy Melting Steel, $19 gross; Old Steel Rails, $20 gross.

New York.

NEW YORK, May 14, 1902.

Pig Iron.—The scarcity of spot Pig Iron continues and large premiums are being paid. Quite a number of consumers are helping themselves with Scotch Pig Iron, which is being sold in small lots. We quote, for summer delivery, Northern Iron, at tidewater, No. 1 X, nominal, $21.50 to $22; No. 2 X, $19.75 to $20; No. 2 Plain, $19.25 to $19.50. Tennessee and Alabama brands are as follows: No. 1 Foundry, $20.50 to $21; No. 2 Foundry, $19 to $19.50; No. 3 Foundry, $18.25 to $18.50.

Steel Rails.—An interesting sale just concluded is for 10,000 tons of 100-lb. Rails for the Subway in this city, all but 2000 tons thereof being for 1903 delivery. We continue to quote nominally $28 for Standard Sections at Eastern mill.

Finished Iron and Steel.—The scarcity of material for quick delivery continues, and round premiums are being paid for early shipment. Among the contracts for Structural Material placed during the week are 4000 tons for the Metropolitan Bank Building and about 4000 tons for a hotel at Twenty-eighth street and Broadway. The American Bridge Company have recently taken 2000 tons of bridge work for the St. Paul road and 3500 tons for the Burlington road. We quote at tidewater: Beams, Channels and Zees, 2c. to 2.25c.; Angles, 1.95c. to 2.25c.; Tees, 1.95c. to 2.25c.; Bulb Angles and Deck Beams, 2.10c. to 2.25c.; Sheared Steel Plates are 1.95c. to 2c. for Tank, 2c. to 2.15c. for Flange, 2.15c. to 2.25c. for Fire Box. Refined Bars are 1.95c. to 2c.; Soft Steel Bars, 1.80c. to 1.85c.

The Lacey-Buek Iron Company.—John Dowling, who for 12 years had charge of five furnaces at Bessemer, Ala., the property of the Tennessee Coal, Iron & Railroad Company, is now superintendent of the Ella Furnace, at Trussville, Ala. The owners, C. E. Buek & Co., have within the last two months purchased a fine coal property within 15 miles of the furnace, and are building 100 additional coke ovens and erecting a modern coal washing plant. They are also erecting a fourth stove and putting in a fourth blowing engine. The company own brown and red ore properties of superior quality. They have recently applied for a charter under the State laws of Tennessee, and will hereafter operate under the name of the Lacey-Buek Iron Company.

Iron and Industrial Stocks.

Aside from one or two issues the market for iron stocks has been rather quiet. The issue of the report of the Tennessee Company was followed by liquidation, which carried the stock down to 62¼ on Monday, from which it has since recovered. The United States Steel issues were languid and soft, the preferred declining to 90¾ and the common to 40¾. Colorado Fuel & Iron has had quite a decline and the statement just issued is not calculated to aid the stock.

Colorado Fuel & Iron Company.—A financial statement has just been issued for March and for the nine months ending with that month. An increase of $70,145 was made in the income account for March. The statement for the nine months is as follows:

	1902.	1901.	Changes.
Net earnings	$1,313,170.	$1,593,042	Dec. $279,872
Less management	149,541	159,255	Dec. 9,714
Balance income	$1,163,629	$1,433,787	Dec. $270,157

The income account of the company for the nine months ending March 31 shows the following:

Net earnings from operations		$1,163,629
Add income from securities		92,166
Net earnings from all sources		$1,255,795
Fixed charges and taxes		556,855
Surplus over fixed charges		$698,940
Sinking funds	$227,154	
Dividend on preferred stock paid	80,000	
Dividend on preferred stock, not paid	40,000	
		347,154
Surplus to credit, profit and loss		$351,785

The profit and loss account for the nine months ending March 31 shows:

Surplus June 30, 1901		$2,096,476
Surplus nine months, March 31, 1902		351,785
Sale of New Mexico Railway & Coal Stock		19,160
Credit profit and loss	$7,483	
Debit profit and loss	4,241	
		3,242
Depreciation on 67 cars sold to Colorado & Wyoming Railway	$17,011	
Balance	2,453,652	
Totals	$2,470,663	$2,470,663
Balance to credit, profit and loss, March 31, 1902		2,453,652
Common stock dividends Nos. 2, 3 and 4		1,206,721
Surplus		$1,246,931

The most interesting feature of this statement is that it shows that the surplus of the company was drawn upon to pay dividends declared on the common stock. President J. C. Osgood reports as follows: "Only one blast furnace has been completed and is in operation, though at a serious disadvantage, owing to the non-completion of the necessary adjuncts, such as storage bins, casting machines, mixers, &c. The second furnace is practically completed, but waiting for the blowing engines. The third furnace is well under way; all of the auxiliary plants are under way, but no time for their completion can be specified, owing to exasperating and continued delays in getting machinery and structural material, most of the contractors being from six to nine months, and in some cases a year, behind the specified dates for the completion of their contracts. A large amount of money has been expended and a vast amount of work done (which will not yield any revenue to the company until all of the improvements are completed), including coal mines, coke ovens and iron mines for supplying the new blast furnaces, railways to iron mines and coal mines, increased water supply, sewerage system, electric plant, new machine shops, foundry, railway tracks, dump cars, ore crushing plant, &c., at the steel works."

Danville Bessemer Company.—The report of the treasurer shows the following:

Assets.

Plant and betterments	$325,217
Available assets in materials, cash and accounts receivable	70,210
Total	$395,427

Liabilities.

Accounts payable	$25,078
Surplus	10,349
Capital stock	360,000
Total	$395,427

The annual report of the Columbus & Hocking Coal & Iron Company, Columbus, Ohio, shows gross earnings of $601,152, against $576,156 the previous year; net earnings of $105,539, against $101,672 the previous year, and a surplus above charges of $50,027, against $49,347 the previous year.

There is some talk of a probable retirement of the balance of the preferred stock of the United States Steel Corporation with 5 per cent. bonds, should the present plan of retiring $200,000,000 of the stock result favorably, which is almost certain.

Report has it that a second payment of $10,000,000 has been made to the underwriters of the United States Steel Corporation. The syndicate engaged itself to furnish $100,000,000, but only $25,000,000 was called in. This sum was subsequently paid back, and to date the underwriters have received a profit of $20,000,000. It is stated that probably as much more will be finally distributed.

Dividends.—The Niles-Bement-Pond Company have declared the regular quarterly dividend of 1½ per cent. on their preferred stock, payable May 20. Books close May 14 and reopen May 21.

The directors of the Bessemer & Lake Erie Railroad, controlled by the Carnegie Steel Company, have declared the semiannual dividend of 3 per cent., payable June 1.

The Vandergrift Works.—On Monday, May 12, there were shipped from the Vandergrift Works of American Sheet Steel Company, at Vandergrift, Pa., 1642 tons of sheets. This is very much the largest day's shipment in the history of this plant, the best previous record for one day being 1012 tons. The Vandergrift Works are being very much enlarged, ground having been broken recently for the building of two more open hearth furnaces, giving a complement of eight. The work of installing eight more sheet mills at this works has almost been completed, which will make a total of 29 mills in the Vandergrift plant. In the Vandergrift-Apollo unit, embracing mills at Vandergrift, Apollo, Hyde Park, Saltsburg and Leechburg, there will be a total of 54 mills. Eugene W. Pargny is district manager of the Vandergrift-Apollo unit and S. A. Davis is division superintendent, with headquarters at Vandergrift.

President Charles M. Schwab and other officials of the United States Steel Corporation, after spending about a week inspecting their plants in the Pittsburgh district, left on Tuesday for New Castle, Sharon, Youngstown, Bellaire and Wheeling, where plants of the National Steel Company, American Steel Hoop Company, American Tin Plate Company and American Sheet Steel Company were inspected. From the Valleys the party will go to Chicago and Indiana, and thence to the ore regions, where the vast ore properties will be inspected. President Schwab and other officials will return direct to New York, after which a report will be made to the Board of Directors of the corporation making recommendations as to what new plants shall be erected and where they will be located. It is certain that the greater part of the $30,000,000 appropriated by the corporation for the building of new works and extensions to existing plants will be expended in the Pittsburgh district.

The United States Court of Appeals has decided against the Wellman-Seaver-Morgan Engineering Company in their suit against the Midland Steel Company for infringement of a charging machine patent. The adverse decision was given on account of defective work in taking out the patent, which was one making a broad claim for "a system of charging furnaces," being an effort to cover the entire field. Reference was made to a previous patent issued to the same patentees, and it is claimed that if the two patents had been taken out together the case would have been solid for the claimants. The case will probably be taken to the Supreme Court, as the Wellman-Seaver-Morgan Company have strong patents left besides the one thrown out. All the charging machines they are now building are being constructed under these patents.

The New York Machinery Market.

NEW YORK, May 14, 1902.

There is no change in the tone of the market. Demand for medium sized lots of machinery continues unabated. During the last week a number of good sized projects came to the surface, the inquiry of the week indicating that good future business may be expected. Prices are firm and unchanged. There are now a number of large projects before the trade calling for heavy power plant equipment. One of the largest of these is that of the North Jersey Traction Company of Jersey City. It will be recalled that this company are to erect a large high tension power station at Newark, N. J. The engine trade are now working hard for the order in connection with this work. No award has yet been made, but specifications of the various builders have been submitted. The first installation in this plant will be 5000 horse-power. One of the very large New York electric stations may be doubled in size, as some of the trade have been asked to bid on a duplication of the present equipment.

We have it from good authority that active work is now in progress preparatory to the construction of the projected Pennsylvania Railroad Tunnel. The plans that are being worked up, it is said, provide for a tunnel running from the New Jersey shore under the Hudson River, Manhattan Island, and the East River to Long Island City. The tunnel is to be electrically operated, and a power station is to be located at Long Island City and another in New Jersey. Our informant states that Westinghouse, Church, Kerr & Co. are to prepare the plans and attend to the engineering details. This concern are, in fact, said to be working on the contract at the present time. In this connection, it is also said that there is to be a change in the *personnel* of Westinghouse, Church, Kerr & Co., which will bring a director of the Pennsylvania Railroad into the company. Subcontracts are now being awarded for the erection of the new library building to be built at Forty-second street and Madison avenue, New York. Norcross Brothers of 160 Fifth avenue, who have the general contract, are placing the orders. They have just awarded the contract for the hoisting machinery to the Lidgerwood Mfg. Company. The amount of this contract is about $20,000. An inquiry is now in the machine tool trade calling for about 20 large machine tools. It is estimated that the amount involved is about $25,000. The inquiry comes from the New York Central Railroad, Allan Brown, purchasing agent, Grand Central Station, New York.

We are advised by C. W. Buckholz, chief engineer of the Erie Railroad, that no decision has been arrived at as yet regarding the rebuilding of the car repair shops at Jersey City which were destroyed by fire about a week ago.

The Union Steam Specialty Company, Scranton, Pa., placed an order with the Prentiss Tool & Supply Company, New York, for one 60-inch Pond lathe, one 60 x 72 Pond planer, one 54-inch Rogers & Hemphill vertical boring mill and one large Bickford radial drill. In addition to this they purchased a short time previous of the same company eight smaller lathes and four planers, the tools represented by these recent orders amounting to over $30,000. As it stands now their factory is equipped with the smallest jewelers' lathes for their indicator work and machinery for building the largest triple expansion water works pumping engines.

The Remington Typewriter Company are about to make extensive additions to their factory at Ilion, N. Y. The new additions to the factory will practically double the present capacity of the works. In themselves the new buildings will constitute a larger plant, covering more floor space, than any other typewriter factory in the world. The most notable of the new buildings will be located on East Clark street beside the present main building. It will have three stories and basement and the ground dimensions will be 55 x 350 feet. In addition there will be a three-story extension in the rear of the present enameling department, also a new brass foundry and annealing and tempering forge occupying a ground space of 75 x 180 feet.

The new plant of the Noble & Johnson Machine Company, Hoosick Falls, N. Y., who suffered the entire loss of their plant by fire the latter part of March, will consist of a main building, 62 x 264 feet, which will be used as machine and wood shop; foundry building, 50 x 100 feet, and boiler and pattern storage house. The plant will be equipped with traveling cranes, will be operated by electric power and will have side track running through entire length. The company at present are using temporary shops and have purchased several wood working tools from the American Wood Working Machinery Company.

We are in receipt of the following communication from the Philadelphia Pneumatic Tool Company: "Our new shops at Twenty-first street and Allegheny avenue are nearing completion and we expect to remove from our present location to the above address the last week in this month. The power plant is now installed and everything will be in readiness for the full operation of our new plant in the course of two weeks. We have ordered about $10,000 worth of new machine tools, to be delivered to us early in June, and with these we shall soon be able to relieve our very much overcrowded condition and be able to make more prompt delivery than heretofore. About 150 men will be required immediately to do the work which we are at present trying to do in our crowded quarters with 95 men. We have recently placed upon the market two new sizes of rotary drills, and have perfected an improved riveting hammer, which is being made in three sizes, having capacities varying from ¼ to 1¼ inch rivets. We have recently received orders aggregating nearly 200 tools from one of the largest shipyards in the country, and this, together with a lot of railroad and other trade, makes an unprecedented rush of business. We are making preparations for an elaborate display of our tools in a working exhibit at the convention of Master Mechanics and Master Car Builders, at Saratoga, June 18 to 25."

Morton K. Moore, president of a new company to erect a plant at Anniston, Ala., for the manufacture of frogs, switches and crossings, has been in New York during the last week purchasing machinery for the new plant. Mr. Moore and the secretary of the company, S. P. Kennedy, can be reached through the Commercial Club, Anniston, Ala.

The Hyatt Roller Bearing Company, Harrison, N. J., are having plans drawn for a building, 50 x 200, two stories high. It is their intention to put up this building as a modern machine shop, and to use their present building mostly for storage, shipping and receiving. S. M. Green, Holyoke, Mass., has been appointed consulting engineer, and will draw up the plans and have charge of the construction.

The Kutztown Foundry & Machine Company, Incorporated, Fidelity Building, Philadelphia, are erecting a machine shop, 100 x 100 feet, so arranged that it can be extended to 400 feet in length; the foundry, 130 x 200 feet in length, arranged that it can be extended to 400 feet in length; a cleaning house, 35 x 80 feet, connecting the two at one end, forming a frontage of 310 feet. This new plant will be built in a strictly modern manner and equipped with modern machinery of all character necessary for their work, being operated in connection with the present plant entirely by electricity, supplied from a central power plant. Contracts have been placed for the structural steel work, traveling cranes, cupolas, blowers, electric motors, generators, engine and boilers. Contracts are yet to be placed for jib cranes, sand blast and machinery of various kinds for the machine shop and sundry foundry equipment. The plant is expected to be in operation not later than January 1, 1903. I. Barr is the secretary of the company and in charge of the work. The company produce boiler fronts and castings, Rose patent grates, compound separators, stationary grate bars.

The Buffalo Foundry Company, Buffalo, N. Y., have decided to increase their capital stock from $10,000 to $200,000, and will immediately build one of the largest and most modern jobbing foundry plants in the country. They have secured a very desirable site of 6½ acres near Driving Park Station, on the Belt Line Railway, Buffalo, N. Y., thus giving them connections with the 28 lines of railway entering Buffalo. The plant for the present will consist of one main foundry building, 320 x 145 feet, steel structure, equipped with two 30-ton and four 10-ton electric traveling cranes, six 5-ton jib cranes and six 2-ton jib cranes, one 102-inch shell, one 84-inch shell and one 66-inch shell cupolas; one 15-ton air furnace, together with air plant and every known modern appliance for the economical production of castings from the lightest up to the very heaviest; pattern making and storage building, 50 x 200 feet, three stories high; supply building, 30 x 320 feet, for the storage of raw materials. It is the intention of the company to use electric power throughout, using the Niagara Falls electric power. The plant is being so arranged that an open hearth steel department, 145 x 400 feet, can be added, together with what machine shops are found necessary.

The Lamb Knitting Machine Company, Chicopee Falls, Mass., are erecting a new addition to their plant and are in the market for shafting, pulleys, steam, gas and water pipe and a sprinkler service.

A brisk demand is reported by the Buffalo Forge Company of Buffalo, N. Y. Among the contracts recently awarded to them are mentioned the equipment of the Pennsylvania Steel Company's forge shop, at Philadelphia, Pa., with 20 Buffalo down draft forges; three large Buffalo fan system heating plants for the Lake Shore & Michigan Southern Railroad shops of Collinwood, Ohio, consisting of the heating and ventilating apparatus for the wood working mill, passenger coach paint shop and the freight car repair shop. The Bowery Bay Building & Improvement Company, New York City, are to be furnished with a 200 horse-power horizontal center crank engine for electric lighting plant. The Buffalo Forge Company are also to furnish the Seaboard Realty Company of New York six 120 horse-power engines and two 95 horse-power engines for the electric lighting plant of this company.

Hartley Turner, manufacturer of wind mills, pumps, &c., Water Valley, Texas, is in the market for small steam and gasoline engine castings.

M. J. Stereiny of Port Arthur, Manchuria, advises us that he would like to receive catalogues and price-lists pertaining to machinery and supply lines of all descriptions.

The Fairbanks Company announce that, in order to provide the facilities necessary to meet the requirements of their greatly increased business, they have secured the premises at the northwest corner of Elm and Broome streets, New York, and have there concentrated all the various departments of their business.

Consolidation of Steel Casting Interests.

Application for a New Jersey charter will be made within a few days by the American Steel Foundries Company which, when the details have been arranged, will include the following plants: Sargent Company, Chicago; American Steel Casting Company of Chester, Pa.; Franklin Steel Casting Company, Franklin, Pa.; Reliance Steel Casting Company, Pittsburgh; Leighton & Howard Steel Company, St. Louis, and the American Steel Foundry Company, St. Louis. The new company are reported to be organized with a capital of $40,000,000, divided equally between common and preferred shares. The amount of stock to be issued has not yet been determined upon. The preferred stock is to be underwritten at par, and for every 100 shares of preferred a bonus will be given of 100 shares of common stock. Arthur J. Eddy represents a number of the concerns included, and Harris, Gates & Co. of New York and Chicago are negotiating the financial details.

Among the underwriters are J. P. Morgan, Charles M. Schwab, E. H. Gary, General Miller and Frank Sturgis of Strong, Sturgis & Co. It is claimed that the common stock will be pooled for 18 months, preventing it coming on the open market.

Gentry Hillman, formerly manager of the city furnaces of the Sloss-Sheffield Steel & Iron Company, has accepted the position of furnace manager of the Tutweiler Coal & Iron Company.

Proposed Iron Works in Australia.

A good deal of rumor is current in Australia with regard to the establishment of an iron works in New South Wales, says the London *Iron and Coal Trades Review*. It appears that several syndicates are interested in various projects. One of these, in which W. Jamieson of the Broken Hill Proprietary and Mount Lyell mines is interested, is credited with the intention of establishing works on the Parramatta River near Sydney, and the expenditure of at least £1,000,000 in the enterprise. The neighborhood of Sydney has been chosen because that city is regarded as the distributing center of Australia, and because it is conveniently situated for the supply of coal and fluxes. Details of a year's Australian imports show that they included 91,000 tons of steel rails, 55,000 tons of rolled iron and steel, and 57,000 tons of sheet iron and steel, and 45,000 tons of wire, making a total of about 248,000 tons. The company propose to erect works which will turn out about 150,000 tons of iron and steel per annum. This, it will be seen, will only cover about half the estimated requirements of the commonwealth. Under no circumstances will it be possible to extinguish the import trade altogether. The Parramatta River syndicate are said to rely for the supply of ore upon the deposit near the Blythe River, Tasmania. The Blythe River has been favorably reported upon by J. H. Darby. Mr. Darby laid it down as a primary requirement that there must be 10,000,000 tons of ore in sight to make it worth while to inspect and consider any given deposit of iron ore, and he regards the Blythe River mine as the largest, purest and most accessible in Australia.

The Australians are following the example of the Canadians, and are offering bounties to aid the establishment of an iron and steel industry. What is proposed is, with regard to iron and steel, 12 shillings per ton on pig iron made from Australian ore, and on puddled iron and steel made from Australian pig iron; total bonuses not to exceed £250,000, commencing on July 1, 1902, and continuing only for five years. On spelter from Australian ore the bonus is £2 per ton for the first 10,000 tons, commencing on July 1, 1902, and continuing for three years. The other bonuses of £50,000 on galvanized iron, wire netting, and iron and steel tubes and pipes, and £8 each on reapers and binders, have also great manufacturing interest.

The Bar Iron Scale.

(By Telegraph.)

PITTSBURGH, PA., May 14, 1902.—The bimonthly settlement of the bar iron scale was made in Youngstown, Ohio, on Tuesday, and for May and June puddlers and finishers will receive the same wages as in March and April. Puddlers are now being paid $5.75 a ton for puddling, and finishers 68.5 cents per ton. The men expected an advance of 25 cents a ton, but the average price of shipment of iron bars in March and April did not warrant an advance. A lodge of the Amalgamated Association has been organized at Hartford, Conn. This is the first lodge of this organization ever formed east of New York City. A lodge is also to be organized at Monaca, Pa.

Removing to Morgantown, W. Va.—Arrangements have just been completed by which the plants of the Steel & Iron Aluminum Coating Company, the Baldwin Automobile Mfg. Company and the Rolling Mill Company of North America will be removed to Morgantown, W. Va. The Steel & Iron Aluminum Coating Company are manufacturers of aluminum coated sheets, which are sold in competition with galvanized. The plant of the Baldwin Automobile Company has been idle for some time. The Rolling Mill Company of North America broke ground at South Connellsville some months ago for the building of a ten-mill sheet and tin plate plant, but the work of construction has not proceeded very far. It is understood that handsome inducements in the shape of free sites and bonuses have been given to these concerns in order to induce them to remove from Connellsville to Morgantown.

Metal Market.

NEW YORK, May 14, 1902.

Pig Tin.—Through a continuance of the manipulations of the markets both here and abroad prices have advanced sharply. Business is, however, still light as to actual consumptive demands, consumers being well supplied. To-day a net advance of a cent and a half was made in this market, and the London net advance amounts to £4 12s. 6d., as compared with last week. The highest price paid was 30.05c., which was given for a comparatively small lot of spot on Monday. Since then the market has held at about 30c., closing to-day 29.90c. for spot and 29.90c. to 30.10c. for May; 29.85c. to 29.90c. for June and 29c. to 29.75c. for July. The London market reached its highest point yesterday with £136 15s. for spot. The closing price to-day was £136 5s. for spot and £131 15s. futures.

Copper.—There was also a manipulating influence apparent in this metal. It is believed in the trade that prominent parties who are interested in the flotation of a certain new Copper company have endeavored to advance prices, and succeeded to some extent. The market has been treated to a number of bullish reports which have had some effect. One of these, for instance, stated that the exports alone for the first three months of this year were greater than the productive capacity of this country. Untrue as this report is, it was given wide circulation. The actual upward movement in prices began yesterday, when Standard Copper was bid up on the New York Metal Exchange to 12c. The excuse for sending the price of Standard so high was that Standard Copper in London is on parity with Electrolytic, the basis for this statement being that sellers are delivering Electrolytic against their Standard contracts. As a result of the manipulating influences Lake advanced to 12¼c., and it is reported that 200,000 lbs. of June were sold at this figure. At the close to-day spot and May to June were quoted 12⅛c. to 12⅜c.; July and August, 12⅛c. to 12¼c. Electrolytic spot to August, 11.85c. to 12c.; Standard spot to August, 11.65c. to 12c.; Casting, 11¾c. to 12c. The London market was advanced to £54 7s. 6d., and closed to-day £54 5s. for both spot and futures. Best Selected closed £57.

Exports thus far this month amount to about 5600 tons, showing a heavy falling off as compared with the preceding month, which was 4000 tons less than the month of March.

Pig Lead.—The market is without change, dull and uninteresting. The Smelting & Refining Company quote 4.12½c. for Desilverized, spot, and 4.10c. 15 days. The London market is unchanged.

Spelter—Is a shade firmer, the spot quotations to-day being 4.45c. June and July delivery are quoted 4.37½c. to 4.42½c. The St. Louis market is a little higher at 4.15c. The London market has been advancing and yesterday reached £18 12s. 6d. The closing price to-day was £18 10s.

Antimony—Is unchanged. Hallett's is quoted 8c. to 8¼c.; Cookson's, 10¼c., and outside brands, 7½c.

Nickel.—The situation is unchanged. Ton lots are quoted at 50c.

Quicksilver.—Prices are on a basis of $48 per flask of 76½ lbs. in lots of 56 flasks or more.

Tin Plates.—The market is unchanged. The American Tin Plate Company are quoting for delivery until October 1 on a basis of $4.19 per box of standard 100-lb. Cokes, f.o.b. New York, or $4, f.o.b. Pittsburgh district. The English market advanced 1½ pence to 13s. 7½d.

The Canton Crucible Steel Company.—PITTSBURGH, PA., May 14, 1902.—(*By Telegraph.*)—The Canton Crucible Steel Company, Canton, Ohio, have been reorganized. Additional capital has been put in and the plant of the concern will probably be somewhat enlarged. The product of the concern, consisting of high grade tool steel of all kinds, will be handled by Alexander Forbes Adam, formerly of Jones & Laughlins, Limited, and whose headquarters will be at 1346 Etna street, Pittsburgh.

HARDWARE.

THE interest in consolidation as a means of improving trade conditions is largely increased by the extent to which it has been applied not only in the production of raw materials and the heavier lines, but also in the manufacture of many kinds of finished goods. Practically every manufacturer of Hardware has had the matter brought to his attention by parties who have endeavored to show the manner in which competition would be diminished, expenses reduced and larger profits secured by the uniting of the interests of those who are making competing goods. The advantage which has apparently attended the operations of some (but by no means all) of these aggregations of interests adds force to the arguments of those who would extend the principle into other lines. There is no doubt, too, that the announcement of the plans of the jobbing consolidation have had great influence in drawing attention to the whole subject as a proposed solution for many trade evils. In view of the fact that this is a subject to which both manufacturers and merchants are giving thought, the history on another page of a consolidation a little outside of the Hardware line, but producing goods under conditions which are not materially different from those which prevail in the Hardware trade, will be of interest. It will certainly indicate that there are difficulties in the trade which cannot be removed entirely, if, indeed, they are materially diminished, by consolidation. On a subject of such importance to both manufacturing and mercantile interests it is desirable to have all available light, and the experience of those who have attempted to put the principle in operation is of especial value.

It has been obvious to those who have been giving any attention to trade methods that there has of late been a marked increase in the care with which merchants in almost all lines of trade have utilized their front windows for the display of goods and in various ways to attract custom to their stores. This fact has, indeed, secured recognition from the British Consul at Chicago, who in a report to the British Foreign Office refers to the trouble, expense and ingenuity which are used in having show windows well arranged. This is, indeed, referred to in connection with the mention of more grave and important matters which characterize American methods and contribute subsequently to the wonderful development of our business interests. The Consul's report might doubtless have gone further, and have made the point that houses enterprising and up to date in this regard are also prompt in adopting other methods which tend not only to increase the volume of their business, but to make it more profitable as economy is secured wherever possible.

The attitude of jobbers toward department stores and catalogue houses causes much concern to the great body of retail merchants. The retail trade of large cities take deeper interest in department stores than do country merchants. On the other hand, the country merchants are much more interested in the catalogue house question than their colleagues of the cities. Both classes of the retail trade, however, feel that their interests are not properly safeguarded when the jobbers from whom they secure supplies are at the same time permitting their large stocks to be used as a basis of supply for what they consider their illegitimate competitors. In some sections of the country the relations between jobbers and their retail customers are rather strained in view of the persistent catering by the former to the trade of the department stores and catalogue houses. While on general principles much liberty of action should be granted to merchants in any line of trade, it would naturally cause friction if jobbers who depend on the patronage of retail merchants should at the same time assist in building up interests which greatly injure the business of such merchants. It is possible that through the influence of associations of retail merchants this unsatisfactory feature of trade may be to a great extent eliminated. Undoubtedly their influence is being brought to bear amicably to limit the ability of department stores and catalogue houses to draw a large part of their supplies from jobbers. It is generally understood that the large department stores and catalogue houses ordinarily secure most of their supplies from manufacturers, as such establishments are able to make their purchases in fully as large quantities as jobbers themselves. Nevertheless, it is very well known that jobbers located in the same cities with large department stores and catalogue houses are in the habit of canvassing this trade daily for the purpose of picking up such orders as are to be obtained. It is further asserted on what seems to be good authority that the jobbers, after having supplied their retail customers with seasonable goods, are frequently in the habit of closing out the remainder of their stocks to department stores and catalogue houses at bargain prices. This certainly would be a shortsighted policy for them to pursue. This is a question which should receive serious consideration from jobbers, as the practice might involve strained relations with the retail trade.

The delay in consummating the consolidation of jobbing interests has the effect of giving an opportunity for the starting of many rumors in regard to difficulties encountered, withdrawals of houses from the movement, &c. Most of these are based on conjecture rather than on any definite knowledge. Those who are promoting the consolidation continue their policy of reticence and refrain from giving the public any additional information. This delay also gives the trade the opportunity of looking at the matter calmly in all its bearings and discussing as well as they can, in view of their imperfect information, the question as to what the effect of the consolidation, when it becomes a fact, will be upon Hardware interests. Apart from whatever difficulties may be experienced in organizing the company, and these are popularly considered to be real difficulties, there seems to be little doubt that one of the serious obstacles to the easy success of the movement is the way in which manufacturers regard it. By very few indeed does it seem to be regarded with any warmth of approval, and by the great majority it is looked upon with disfavor as possibly involving some danger to manufacturing interests, and certainly not likely in any important way to advance them.

Condition of Trade.

The past week has witnessed a continuance of the excellent trade which has prevailed since the opening of the season. Retail merchants report business as active, although the attention farmers are giving outdoor work interferes somewhat with the current trade. As a rule, however, they are enjoying such a measure of prosperity as justifies them in purchasing rather more liberally than usual. The activity in building, too, has a stimulating effect on business. Practically all mechanics are fully employed and at good wages. The Hardware market

has not been affected by any important changes in price since our last report, but is characterized by a firm tone with something of a tendency toward higher prices. Almost every day the representatives of jobbing houses, who are in correspondence with manufacturers, find that there is a stiffening in the price of some line or article, not usually in the way of open and general advances, but rather in the withdrawal of some special discount or concession which has previously been in force. There is a good deal of difficulty in obtaining season goods, and those who have not covered their requirements are likely to be short of the articles when the demand sets in. In a great many other lines, too, manufacturers are behind their orders and the merchants are obliged to hurry up shipments of goods. The great question as to the consolidation of jobbing interests continues to excite the curiosity of the trade, who are, with more or less suspense, awaiting definite information as to the form in which the consolidation plans will be carried into effect. On the part of the jobbing trade there is much enterprise being put forth at the present time, and it is evident that jobbing houses, whether identified with the consolidation or not, are preparing for active efforts not only to hold their trade, but also to extend it. The competition which exists is certainly animated, and all the indications point to the fact that the retail trade, who look to the jobbers for the supply of at least a part of their goods, will have no occasion to complain of lack of attention. Export business feels, perhaps, a little more than it has the effect of the great activity which prevails in the home market, as some manufacturers are disposed to neglect their foreign business. Others, and undoubtedly the greater number and the wiser, are taking care of their customers abroad and endeavoring to extend still further their export trade.

Chicago.

(By Telegraph.)

The slight lull noted last week in trade in some lines of Hardware has been replaced by increased activity and larger sales. Although work on some large structures has been delayed or suspended because of the inability to get material, it has had no influence on smaller buildings, and the demand for Builders' Hardware for such work has continued active and even urgent. Labor is fully employed, and this is reflected in the continued active demand for Carpenters' Tools. The demand for Screen Doors and Windows, as well as for Wire Cloth, has continued pressing, and in most instances dealers are unable to relieve the stringency. Most manufacturers are still far behind in the shipment of orders and complaint is general throughout the trade, ranging from the manufacturer to the consumer. The demand for Ice Cream Freezers and Refrigerators and such other seasonable goods is as active as ever, and some manufacturers have notified jobbers that they can take no more orders under any circumstances. Prices of all Shelf Hardware, generally speaking, are very strong. Lines in which there is dissatisfaction expressed are Tacks and Screws, prices for which are not fully maintained, but the volume of business continues liberal. There has been little, if any, falling off in the demand for Heavy Hardware, counteracting the effect of the delay in obtaining goods from the mills being of more importance than the securing of new orders. The affairs of the embryonic jobbers' combination have been of more than usual interest during the week. It is reported that a number of jobbers previously identified with the combination have withdrawn, having declined to renew the options which expired on May 1; others, however, have renewed the options to June 1, and some on better terms. Report is current that two of the local houses have given options by which, if accepted, they will receive cash instead of stock for their business.

St. Louis.

(By Telegraph.)

A large volume of trade is reported, and a view of the activity apparent in the shipping departments of the various jobbing establishments bears out this condition most fully. The recent rains were most needed, and in the sections tributary to this market have had a most beneficial effect on the growing crops, resulting in strengthening the feeling in the mind of the Hardware dealer of a continuance of the strong call for goods from his shelves. The goods in special demand include Refrigerators, Ice Cream Freezers, Lawn Mowers, Wire Screen Cloth, Screen Doors, Poultry Netting and other specialties required for the wants of the season. While building operations locally have been somewhat curtailed, owing to impending strikes and other causes, the demand and inquiry for Shelf and Builders' Hardware are said to be large for both local and outside wants. Firmness in the matter of prices is said to rule all through the list. The heavy department of the market is handling a very fair volume of business.

Nashville.

Gray & Dudley Hardware Company.—The Hardware trade is unusually good for May. We are having delightful weather, which in part accounts for the strong demand for Hardware. We had a very hard winter and the spring trade opened later than usual, but the late trade has been better than was expected. The partial strike of the building trade unions is interfering with the local trade to some extent.

On the 26th inst. our city celebrates the arrival of the first train over the new Tennessee Central Railroad, which is just being completed from the Southern and Cincinnati Southern roads in East Tennessee through the Cumberland Mountains to Nashville, a distance of 185 miles. This being the first independent competitive line of railroad built into Nashville for 25 years, it will be the occasion of considerable rejoicing. The contract for the extension of this road from Nashville to a connection with the Illinois Central will be let in a few days. The Eastern branch of this road opens up to us the coal fields of the Cumberland plateau, perhaps the most valuable coal fields in the South and heretofore almost entirely undeveloped.

As we view the situation here, the prospects for a good business in the fall are flattering.

Cleveland.

The W. Bingham Company.—Business in the general Hardware line in this section is very good at present and very encouraging for the future. There is no let up in the demand for all kinds of Hardware that are used at this time of the year. There is at present a large amount of Hardware going forward from Cleveland by rail and water.

The manufacturers in some lines seem to be catching up a little on their back orders, which enables us to serve our customers somewhat more promptly than heretofore. The consumption of all kinds of Hardware is going on at a rapid rate all over the country, and there is every indication of a further increase in trade on all kinds of general Hardware, Mining, Milling and Manufacturing Supplies during the balance of the year.

Fine weather and good roads, especially in this section, go a long way toward helping to bring trade to our customers, and therefore their wants are multiplied. A large amount of goods is being sold for fall shipment, and customers who put off date of shipment too far, we are afraid, will have a repetition of last year's experience—namely, they will lose a good many sales. Our advice to our customers is to buy their goods now, put them in stock, cover them up and keep them dry and clean for fall use, and be ready for the good trade that will surely come to them later on—that is, if they have the goods on hand. Now is the time to get them rather than at the last minute, and then be obliged to hammer the jobber and the manufacturer for the goods. There is no overstock in the hands of manufacturers, jobbers

or dealers on many kinds of goods, so it will simply be a case of "first come first served."

We say to our customers, take in stock your Coal Hods, Elbows, Stove Boards, Sheet Iron, Axes, Cross Cut Saws, Meat Cutters and Stuffers—in fact, all fall goods—as fast as you can get them from now on, and do not put off time of shipment to September or October to save a little interest on your money simply because you do not want to pay for them a little in advance. It is better to take the goods now and be sure of profit that will come by having the goods on hand when fall trade opens. We say this because we do not want to be in a position to say to our customers later on, when the goods cannot be furnished as promptly as we should like, "we told you so."

Louisville.

W. B. BELKNAP & CO.—The markets continue steady and very much as reflected by the last two or three weeks' reports in *The Iron Age*.

There is an excellent demand for all sorts of material and no unwillingness to buy for future delivery. In other words, people are not afraid of any slump apparently for some time to come.

While speculative securities may run off, as did those of the Dominion and Rutland and some others, solid material, like Bar Iron and Steel, is a very different proposition, and is as good to-day as it was yesterday, and promises to be so for some time.

Meteorologically it is still dry with us, seriously interfering with the product of the market gardeners. The rains have been in the nature of local showers. We have not had good, steady general rains since the sleet storm of the winter.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—We are "up against it" in the matter of strikes, both locally and from outside. Wool has dropped 2 cents per pound, owing, buyers claim, to strikes in woolen mills in the East. As wool is one of our leading products, the outlook for sales is poor. As the sheep men cleaned up last year, they are in a position to store this year's clip until prices are more satisfactory.

Our planing mills are all on the "unfair" list, as they will not consider a nine-hour day. It seems folly at this time, when our Sash and Doors are getting such a foothold in the East and mills are making money, that they do not meet their employees in a fair spirit. This strike will tend to stop building all along the line.

Saw mills also have a demand for recognition from organized labor that they decline to concede, so they may be shut down, a serious matter in this community, where mills now have cutting capacity of 1,500,000 feet every 24 hours.

We regret to chronicle these drawbacks, as conditions, present and future, up to this time have been of the best.

Weather is favorable for all farm operations, and prospects are all that could be desired.

San Francisco.

PACIFIC HARDWARE & STEEL COMPANY.—A week ago San Francisco was startled by a strike which occurred on the car system of the United Street Railways. Not a car was run for a week and the strike seriously interfered with business, but the best of feeling prevailed both on the side of the strikers and that of the general public. Conferences were arranged, and the strike was satisfactorily settled and business resumed.

The Hardware consolidation is the principal topic that is being discussed by both the retail and jobbing trade, the feeling generally being that if the consolidation is run on right lines it will correct certain abuses that now exist and help strengthen the bonds that now exist between the retailers and jobbers.

Business still continues active, particularly in the building line. Cutlery and Sporting Goods are in fair demand, while the trade on staples and Heavy Hardware has somewhat fallen off. The whole country is in good shape and everything points to a prosperous season. Collections are coming in more freely than last month.

NOTES ON PRICES.

Wire Nails.—An active demand continues for Wire Nails, but there is a noticeable improvement in the promptness with which mills are making shipments. Outside mills are seeking business to a considerable extent, and the opinion is expressed that but for the fancy prices which can be obtained for Steel there would be more or less inequality in Nail quotations. While the base price appears to be firmly maintained the differentials between carload lots to jobbers and retailers are not strictly adhered to. In some instances quotations for jobbers are made to retailers. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots	$2.05
To jobbers in less than carload lots	2.10
To retailers in carload lots	2.10
To retailers in less than carload lots	2.20

New York.—Local stocks are becoming better assorted, owing to prompter shipment of Wire Nails from mill. The demand is satisfactory, and prices are well adhered to. The market is represented by the following quotations: Small lots from store, $2.30; carloads on dock, $2.18 to $2.20.

Chicago, by Telegraph.—Orders of moment continue to be received for Wire Nails by both the combine and independent mills, and the market remains strong at full prices. Single carloads bring $2.20, and small lots from store sell at $2.25 to $2.30. The rumors which have been agitating the trade in regard to the purchase of the independent mills by the combination or by union in independent mills are still circulated but apparently losing force. While it is admitted that one or two independent mills have been desirous of making a combine, probability of such a union now seems remote. As far as the purchase of the mills by the United States Steel Corporation is concerned, it is emphatically denied that there are such intentions. A conference of the independent mills will probably be held during the latter part of the month, at which time the subject under discussion is likely to be market conditions, which may have a bearing on future prices.

St. Louis, by Telegraph.—The current demand for Wire Nails from jobbers is of very fair volume and prices are unchanged. Carload lots are quoted at $2.25, and small lots from store at $2.30.

Pittsburgh.—Current business in Wire Nails is very good, and buyers are specifying liberally on contracts placed some time ago when prices were slightly lower than they are now. The tone of the market is firm, and we quote Wire Nails at $2.05 in carloads, and $2.10 in small lots.

Cut Nails.—There continues to be some difficulty in getting shipments of Cut Nails from mill as promptly as the trade requires. Steel continues scarce and high in price. The market is firm at the following quotations, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	$2.05
Less than carload lots	2.10

Chicago, by Telegraph.—There has been a fair order trade for Cut Nails, and the market has continued firm, with full prices readily obtained for all kinds and sizes. Small lots are selling from store at $2.30.

St. Louis, by Telegraph.—Cut Nails continue in fair demand, and the quotation of $2.30 for small lots from store is the rule.

Pittsburgh.—The new list of extras on Cut Nails, adopted at the recent meeting of the manufacturers, carry considerable advances on the smaller sizes. The trade are somewhat skeptical as to whether the advances made in certain sizes, especially on 3d Fine, can be maintained. There is a good demand for Cut Nails, and some of the mills report that they are still unable to get Steel as fast as needed. We quote Cut Nails at $2.05, base, in carloads, and $2.10 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination.

Barb Wire.—Requirements for Barb Wire continue heavy, and manufacturers have not entirely caught up on contract orders. The output of which the mills are capable is said to be somewhat restricted owing to the scarcity of Steel. Prices are firmly maintained, and are represented by the following quotations, f.o.b. Pittsburgh, 60 days, or 2 per cent. for cash in 10 days:

	Painted.	Galv.
To jobbers in carload lots	$2.60	$2.90
To jobbers in less than carloads	2.65	2.95
To retailers in carload lots	2.70	3.00
To retailers in less than carloads	2.80	3.10

Chicago, by Telegraph.—No new features have developed in the Barb Wire market. There has been a fair trade and steady market, Painted selling at $2.80 and Galvanized at $3.10 in single carloads, with 5 cents extra for small quantities.

St. Louis, by Telegraph.—Trade in Barb Wire continues along recent lines, and is referred to by jobbing interests as being very good. In small lots Painted is quoted at $2.90 and Galvanized at $3.20.

Pittsburgh.—Current demand is heavy, and the mills are still considerably behind on contracts. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, $2.60; Galvanized, $2.90; less than carload lots, Painted, $2.65; Galvanized, $2.95.

Plain Wire.—Mills continue to be crowded with orders for Plain Wire, owing to the large current demand. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots	$2.00	$2.40
To jobbers in less than carload lots	2.05	2.45
To retailers in carload lots	2.05	2.45
To retailers in less than carload lots	2.15	2.60

The above prices are for base numbers 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	Base					$0.40	extra.
10	$0.05	advance	over	base		.40	"
11	.10	"	"	"		.40	"
12 and 12½	.15	"	"	"		.40	"
13	.25	"	"	"		.40	"
14	.35	"	"	"		.40	"
15	.45	"	"	"		.75	"
16	.55	"	"	"		.75	"
17	.70	"	"	"		1.00	"
18	.85	"	"	"		1.00	"

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—Plain Wire mills continue to be overwhelmed with orders, but it seems almost impossible to discourage prospective buyers, notwithstanding the difficulty in making shipments. The prices remain unchanged, jobbing lots selling at $2.20 from store.

St. Louis, by Telegraph.—Conditions in the matter of demand for Plain Wire are fair, and No. 9 is quoted at $2.25, and Galvanized at $2.65, with the usual advance for other sizes.

Pittsburgh.—A good deal of business is being placed for Plain Wire and the mills are very busy. We quote Plain Wire at $2 and Galvanized at $2.40, in carload lots, f.o.b. Pittsburgh. For small lots the usual advances are charged.

Rivets.—Some of the manufacturers have recently been withdrawing some of their extremely low quotations, and as a result the market is more even, and has a somewhat better tone than heretofore.

Padlocks.—An advance of about 7½ per cent. has recently been made by the manufacturers of Wrought Iron Padlocks, and the market is quite firm at the new prices.

Cast Iron Goods.—In view of the condition of the market for the raw material the prices of Cast Iron Goods are, as a rule, decidedly firm, and on some lines, such as Grindstone Fixtures, Hay Fork Pulleys, Well Wheels and Stebbins' Molasses Gates, higher prices have recently been announced.

Saddlery Hardware.—The Association of Manufacturers of Saddlery Hardware has recently been advancing prices on some lines, and in this class of goods generally the market is characterized by a firm tone.

Cordage.—Conditions in the Rope market show but little change from week to week. Demand continues moderate, the trade confining purchases to actual requirements. Current quotations are fairly well maintained for small lots, while for large lots a rebate of ¼ cent per pound is usually allowed. Quotations are as follows: Sisal Rope, on a basis of 7-16 inch and larger, 10 to 10¼ cents per pound; Manila Rope, on the same basis, 13½ cents per pound.

Paris Green.—During the past week there has been a more active demand for Paris Green. Orders are being received more freely than for some time. Owing to an absence of any agreement among the manufacturers there is some variation in prices. Quotations are as follows:

	Cents.
Arsenic kegs or casks	11¼ to 12
Kegs, 100 to 175 pounds	11¾ to 12½
Kits, 14, 28 and 56 pounds	12¾ to 13½
Paper boxes, 2 to 5 pounds	12¾ to 13½
Paper boxes, 1 pound	12¾ to 13½
Paper boxes, ½ pound	13¾ to 14½
Paper boxes, ¼ pound	14¾ to 15½

Glass.—It is understood that one of the wage committees have signed the American Window Glass Company's scale of wages for the fire of 1902-03, which gives a 10 per cent. advance over present wages, upon condition that the majority of factories close from May 15 to October 1. This agreement will only be binding on the American Window Glass Company provided a large majority of the co-operative and independent factories also close down during the period stated. It is surmised that the alternative offered by the American Window Glass Company is a large reduction from the present wages for the next fire. If the workers of the Glass organizations can induce all factories to agree to an eight months' run the wages will be, it is said, the highest ever known in the Glass trade. The cause of the generous offer on the part of the American Window Glass Company is supposed to be their desire to shorten the present fire and to postpone the starting of the next, so as to prevent factories outside the combine making enough Glass to fill their contract orders. It is quite clear that the American Company are not animated by philanthropic motives in offering the advance in wages, nor that they have sympathy for the consumer, who eventually must pay the advance in cost of making Glass. If the workmen of the outside factories do not agree to the American Company's proposition the fight for the control of the market is expected to be a bitter one. Demand for Glass in the local market is light. Quotations are as follows:

	Discount.
From store, single and double strength	89 %
F.o.b. factory, carload lots:	
Single and double strength	90 and 5 %

Paints and Colors.—*Leads.*—There is a considerable quantity of White Lead in Oil going into consumption daily. Trade is referred to as being more active than for some time. Quotations are as follows: In lots of 500 pounds or over, 6 cents; in lots of less than 500 pounds, 6½ cents per pound.

Spirits Turpentine.—The local market has a stronger tone than last week, resulting from Southern advices of light receipts and buying by export houses to fill May contracts. At this point demand is light with a firm market at the following quotations, according to quantity: Southerns, 47½ to 48 cents; machine made barrels, 48 to 48½ cents per gallon.

The Jobbers' Consolidation.

As we go to press we are in receipt of the startling report that the jobbers' consolidation is confronted by a crisis so serious as to imperil the success of the project in anything like the form which has been outlined for it. This rumor is to the effect that one of the most prominent merchants connected with it decided yesterday to terminate his connection with the project. It is impossible at this late hour to confirm the report, which is given for what it is worth.

NOTES ON FOREIGN TRADE.

BRITISH LETTER.

Office of *The Iron Age*, Hastings House, Norfolk St., London, W. C.

The Week's Hardware Trade.

THE Hardware trade during the early days of May is not equal either in value or volume to this time last year. In Sheffield unemployment is rampant. So serious is it that skilled artisans are glad to take any kind of work, while business organizations which have been built up on the workmen's side for many years are temporarily, at least, broken. Many master employers who have had their workmen for many years express deep regret that they cannot maintain their workmen round them any longer. The trade in Agricultural Appliances, generally at this time of the year brisk, is distinctly dull. The profits recently announced by various Agricultural Implement manufacturers show a serious drop compared with recent years. For Scythes, Sickles and Reapers a fair trade is done, the winter stock in some cases having been depleted. The Midland Hardware trade is distinctly below the average, and prices are unsatisfactory. Both for home and export there seems to be a general disposition to await developments, and there is practically no buying for stock. Among the goods that are selling readily may be noted Japanned Traveling Trunks and Bonnet Boxes, but, of course, as this trade increases on account of the season the coal vase trade slackens. In other departments of the tinware trade things are slack. There is a fairly good demand for Lamps and Lanterns for ship, Carriage and Cycle use. The brass foundry trade has improved during the last week or two, although it was quiet at the beginning of the quarter. Brass Hinge makers are busy, and there is a good volume of demand for fire brasses of the medium and cheaper descriptions. Chandelier and Gas Fitting manufacturers report their business as being average, but the orders they are receiving are almost entirely for machine made goods of the cheaper kinds. The gas lighting branch has undoubtedly benefited enormously by the introduction of Incandescent Burners, but upon the other hand the use of electric light is steadily growing under the influence of reduced charges and cheap fittings. The building trade remains quiet, but some orders have recently come in for Ranges, Grates and Builders' Fittings generally, the demand being mainly stimulated by the increased attention paid to sanitation by local authorities in all parts of the country. The general result of this has been to stimulate the trade in Baths and Lavatory Fittings as well as of Pipes and Drain Taps. On overseas account business with Australia is heavy, New Zealand, in particular, ordering in quite unusually large quantities. The difficulty of sending inland heavy stocks in the ports of South Africa has led to a stoppage of orders from that quarter. As I have several times remarked, the trade for best Locks continues good, but for the cheaper qualities little or nothing is doing. A large demand for Iron Hurdles and Fencing comes from the Government for war purposes in South Africa. The recent ease with which the Boer commandoes broke through the Barbed Wire fencing has led to the Government demanding something heavier and stronger. Large orders have been placed for the stronger quality in the Midlands and in Glasgow.

Russian Trade.

I have previously mentioned the attempts on the part of Russian officials to cultivate trade between Russia and Great Britain. Mr. Tatischeff, the financial agent of the Russian Empire, and Prince Scherbatoff, president of the Moscow Agricultural Society, have been addressing English audiences, pointing out what an El Dorado Russia really can be made. The correspondent of an English journal has been criticising these gentlemen somewhat severely. We need not, however, concern ourselves with these criticisms, but I append herewith a slight extract from this correspondent's opinion as to the possibilities of trade in Russia. He says, *inter alia:*

But why should Englishmen not take advantage of Prince Scherbatoff's project and invade Russia themselves? There are, and have been hitherto, many openings for British enterprise. Unfortunately, English merchants of the past have not sufficiently studied Russia and the Russian markets, and hence have arisen those hazy and prejudicial notions regarding the practicability of establishing English trade with Russia on a substantial basis.

The result has been that England has thus allowed herself to be forestalled—much against her usual practice—by other nations. There are French and German firms who do a splendid trade with Russia, but very few English firms indeed. Since the notification of the German-Russian Commercial Treaty the Germans have left no stone unturned in their efforts to further trade. Why have English merchants not availed themselves of the advantages offered by that treaty, seeing that they enjoy practically the same privileges as the Germans?

Besides, German commerce restricts itself to the Baltic provinces, St. Petersburg, Moscow, Nijni Novgorod and Poland, because, not knowing the Russian language, the German merchants have to rely upon the service of the Jewish commission agents, who do not penetrate into the heart of Russia at all. Why should not the English do this now, and find their way into the great Russian provinces?

And if the English, why not the Americans?

Traveling Regulations in the Transvaal.

Stringent regulations are being enforced against the admission of commercial travelers with samples into the Transvaal. One traveler, the senior partner of a large London firm, managed to secure a permit for ten days, but was not allowed to carry any samples. It is said that the fact of a Birmingham traveler with samples of Brass Fenders, Bedsteads and similar goods having got into the Transvaal has created heartburning among rivals on the coast. From what I hear, however, these regulations, stringent though they are, can be got around with a little ingenuity and diplomacy. Thus, one traveler, having a permit to carry two tons of samples, has succeeded in carrying three. Still, American travelers who are thinking of going to South Africa upon the termination of hostilities must be prepared for some irritating regulations. Speaking of irritating regulations, an amusing story comes from Valparaiso, Chile. The cricket club there sent to England for a large consignment of bats and a few stumps. On arrival they were liable to a duty of 30 per cent., but it occurred to the captain, who had had a good deal of experience in custom house business, that it would be a good move to enter the goods as *utiles para agricultura*, i.e., Agricultural Implements, which were allowed to enter free of duty. This was done, and it was pointed out to the Vista (the custom house official who examined the goods) that with the end of the stump and the aid of the flat of the bat a hole was made in the ground, in which the seed was placed. This explanation was considered satisfactory and the entry paper marked *libre* (free).

Another Big Line for South Africa.

With the conclusion of the war in South Africa will come many openings for manufacturers. One of them, and not the least, will be to supply traders and foreigners with Wagons, heavy, medium or light, as the case may be. Before the railway extension north all the transport to the diamond fields and all the wool and other produce was carried by the buck Wagon, the journey from Port Elizabeth to Kimberley occupying about 35 days in seasons when the grazing was good. Now the ox Wagon is chiefly employed in carrying produce from the farms to the markets or railway stations and goods from the stations to outlying villages. The chief use of the ox Wagon, broadly speaking, is for farm purposes, and the question is whether for farm purposes a new stamp of vehicle may not be preferable to the heavy, slow traveling, springless ox Wagons, which cut up the roads terribly and greatly crowd the traffic in the town streets. An ox Wagon in a narrow street, with a span of from 16 to 20 oxen, requires almost as much room to turn in as a man-of-war and is as great a nuisance as a camel in the crooked passages of an Eastern bazaar. Wagon making has for years been one of the principal industries in the Cape, and we find that in 1891 there were 3142 Wagons and 3937 Carts made in the colony. The wood used is chiefly colonial wood. The hind wheels were fitted with brakes worked by a lever from behind, and, in addition, many Wagons

carried an iron "rheimschoen" or shoe. Buck Wagons will carry up to 10,000 pounds weight and tent Wagons up to 3 tons, if necessary.

Hardware in Spain.

In a report from Corunna, in Spain, I observe the following imported items and their country of origin:

MACHINERY.—The machinery imported from Germany was 131 tons; Belgium, 76 tons; and the United Kingdom, 64 tons.

METALS.—In metals 395 tons were imported from the United Kingdom, 294 tons from Germany, 96 tons from France, 78 tons from Belgium, and 21 tons from Austria-Hungary.

TIN PLATES.—Of the 225 tons of tin plates imported, 218 tons came from the United Kingdom and 7 tons from Belgium.

CAST IRON.—Of cast iron 27 tons came from the United Kingdom, 20 tons from France, 16 tons from Belgium, and 14 tons from Germany.

WROUGHT IRON.—Of wrought iron 260 tons were imported from Germany, 148 tons from the United Kingdom, 62 tons from Belgium, and 58 tons from France.

In another report, coming from the district of Villagarcia, is a short paragraph which I feel in duty bound to quote. It conveys a serious charge against German manufacturers, but as the report is official, I presume the gentleman writing it is prepared to vouch for its accuracy. He says:

> Among the imports from the United Kingdom Hardware holds the first place, notwithstanding German competition carried in some instances beyond the bounds of fairness. I have visited two or three shops engaged in this trade, and almost always have found a so-called "British article" of German fabrication with British trade-mark on it, but not the name of the British manufacturer. The tool was, of course, an inferior article, and is offered at about 45 per cent. less than the British tool, and as the chief characteristic of the Gallego is to buy where he can cheapest regardless of quality, this is a very serious drawback to British manufacturers.

Trade in Buenos Ayres.

While the financial situation in Argentina is so variable in character, it is difficult to get business onto a sound footing. During the year 1901 the failures in the district of Buenos Ayres involved liabilities of over $20,000,000. It is estimated that private arrangements with creditors add at least 40 per cent. to this total. None the less, the trade of the district is large, the imports amounting to over $100,000,000, and the exports to nearly $120,000,000. The requirements of the city itself are very large, for the well to do people live luxuriously. All the streets in the center of the town are supplied with electric light, while many private houses and offices are fitted not only with electric light, but with electric fans. Elevators, large and small, are found in the offices and residential flats. There is, indeed, a steadily increasing demand for all kinds of electric appliances for domestic use, such as elevators, fans and ventilators. The practice of living in suburban villas has stimulated the trade in acetylene gas. There is quite a demand for simple and effective acetylene gas installations. In 1900, 590 tons of calcium carbide were imported, and 400 tons in 1901. In addition, there is a factory at Cordova producing by electrical power 400 tons, all of which is consumed in the country. Another line of business, which can be successfully cultivated in this district, is that of freezing apparatus of one sort and another. In the slightly heavier lines there would appear to be opening for the following goods:

1. Agricultural Implements and Machinery resembling those imported from the United States, made to standard sizes, accompanied by spare parts duly numbered to make replacing easy.
2. Light Carriages of two or four wheels, such as come from the United States.
3. Railway and electric tramway rolling stock and permanent way and all manner of appliances for mechanical land transport.
4. Soft steel girders of various shapes, used very largely in house building.
5. Iron Windmills, which are used in increasing numbers to pump water on the "estancias" (farms or ranches) for cattle.
6. Weigh Bridges for use on "estancias," simple, accurate and durable.

Trade in the Levant.

I have repeatedly drawn attention to the possibilities of trade in the Eastern Mediterranean, and later information only confirms my previous opinions. The past year has been one of considerable prosperity in the district of Morea, Greece, and the provinces of Acarnania and Aetolia. The crops without exception turned out well in size and quality, and remunerative prices were obtained. All branches of the export and import trade have been active, and prospects point to a continuance of this prosperity. One of the causes leading to this has been the success of the currant crop, prices ruling high and steady throughout the season, both in Greece and in all the consuming markets. One of the factors making for this, too, has been the Currant Bank, established two years ago, and intended to benefit the smaller currant growers. Its capital, derived from the sale to local distillers of the retention currants deposited in Government stores since the passing of the Retention Law in 1895, now amounts to $1,000,000. Every currant grower is, *ipso facto*, a shareholder in the bank, and is entitled by its charter to an annual cultivation loan at 6 per cent., this loan being in proportion to the weight of currants produced by the grower during the preceding season, or he may take a portion of the loan in sulphate of copper, at cost price, this article being imported annually by the Currant Bank in large quantities. Prior to the establishment of this bank, the great majority of growers were compelled to apply to the local capitalists for their cultivation expenses, paying anywhere from 12 to 25 per cent. interest. Not only has this bank substantially benefited those who have traded with it, but other bankers and capitalists have been compelled to lower their charges on all their loans, with the result that money generally has become much cheaper and more plentiful in its circulation among all classes. Machinery for cleaning currants has been largely imported during the past two years, both from Great Britain and the United States.

The trade in the district of Thessaly in Greece is also in a satisfactory condition. There is a growing demand for all kinds of mechanical appliances, agricultural machines and manufactured articles. The Greco-Turkish war retarded the development of the natural resources of this district for too long a period, but the ill effects have now largely worn off. It is worth notice that, although this district is growing more and more prosperous, there does not appear to be anybody living in the district who makes a point to push either American or British goods. During the past 15 years no foreign merchant or commission agent of any importance has established himself in that town, although during that period it has grown from a village of about 5000 inhabitants to a busy commercial center with a population of about 23,000. There would seem to be room here for a pushing young commission agent. Among the imports during the year 1901 into the district of Thessaly may be mentioned 10,911 cwt. of wrought metals, valued at $160,000; 26,634 cwt. of unwrought metals, valued at $92,000; machinery, over $10,000; 1702 cwt. of nails, valued at $5000.

Going up further north into the Ottoman Empire, the Anatolian district of Northeast Turkey imported last year 3192 cwt. of copper, valued at $64,000; 8300 cwt. of iron and iron ware, valued at $35,000; 1204 cwt. of Tin Bars and Plates, valued at $21,000, and 1972 cwt. of Hardware, valued at $11,500. In addition to this, Anatolia is one of the gateways to Persia, and during the same period 740 cwt. of Hardware and 440 cwt. of copper were imported for transit to Persia.

American goods are obtaining a footing at Trebizond, on the Black Sea, Asiatic Turkey; 900 barrels of Wire Nails, valued at $1750, were imported from New York last year. The invoices were in French, the prices in francs and the weights in kilos. Among other purchases last year, Trebizond bought 3190 cwt. of copper, valued at $64,000; 22,470 cwt. of Hardware, Cutlery and Nails, valued at $120,000; 4170 cwt. of metals (lead, zinc, steel), valued at $1750; 51,600 cwt. of petroleum, valued at $52,000, and 1470 cwt. of Tin Bars and Plates, valued at $22,000. Many of the Trebizond merchants also buy largely for the Persian trade.

In view of these figures it may, I think, be said with truth that a healthy market is developing on the Eastern Mediterranean.

The Demand for Galvanized Sheets.

As showing the demand which is expected for galvanized iron sheets, an order has been given on the Birmingham iron market for 15,000 tons of steel plat-

ing bars for galvanized purposes for a South Wales firm. This order represents an aggregate value of $375,000, and is believed to be the largest order of its kind ever given out in the Midlands. A large proportion of the sheets will be shipped to South Africa.

AMERICAN PROSPECTS IN AUSTRALIA.

THE following interview with W. A. Green, vice-president of the Strong & Trowbridge Company, in charge of the London branch of this New York export commission house, given our own London manager, discusses interestingly some Australasian trade characteristics:

It may at once be said that after 12 months spent in Australia carefully examining into the situation Mr. Green is entirely satisfied with American prospects out there. From what I could gather he thinks that there are few things the Americans cannot sell if they only set themselves about it. Our conversation, therefore, turned not so much on the details of what Australia requires as upon the methods by which American trade can be built up. As he represents a commission house, it is not unnatural that his point of view is somewhat different from the ordinary merchant. To the question, "What do Australians think of American merchants?" Mr. Green replied:

"They are highly thought of by all progressive Australian merchants; but it is of the first importance that those who transact business between Australians and Americans should be quite free from any financial connection with the shipping rings. When I went to Australia I found a good deal of ignorance prevailing as to the actual operations of the shipping rings. Meeting a number of Melbourne traders at dinner one evening we discussed the situation. They all of them said they had been promised their rebates, but none had so far received any. When I told them that there was very little likelihood of their ever receiving a cent on rebate account they began to take stock of the situation in a manner which can only be described as severely inquisitorial."

"I suppose, then, you devoted a good deal of your time in making clear the actual methods of the shipping rings and their influence upon Australian trade?"

"Yes; the situation was forced upon me, and I had to go through with it, sometimes even to the extent of neglecting more distinctively personal affairs. I am, however, quite satisfied with the result, because I left Australia with the full knowledge that the merchants at all the seaport towns are now fully alive to the dangers of entrusting their American buying to houses financially interested in any shipping combination, realizing that such freight would be used to support such combinations as their buying agents were interested in."

"Well, then, putting the shipping rings on one side, how would you recommend the sellers in America and buyers in Australia to get together?"

"I answer without hesitation that the natural channel is through the commission houses. I would say either to the buyer or to the seller, 'Find an upright commission house who have no interests but those of their clients to serve and transact your business through them."

"It is urged against your commission houses that the tendency is to get control of the whole business, with the result that the manufacturer becomes your slave, so far as export business is concerned, and that it becomes correspondingly difficult for young manufacturing and export houses to capture any of the trade. What have you to say to that indictment?"

"Commission houses in the past have made many serious mistakes, and they are now paying for it in a loss of confidence among their clients at both ends."

"Then may I take it that the up to date commission house is one which, so far from regarding jealously any attempt on the part of the manufacturer to cultivate trade on his own account, would actually encourage him to do so?"

"Undoubtedly. I go further; it is a mistake on the part of the manufacturer or exporter to rely upon the commission house to do all his business for him. Besides, that is not the business of the commission house."

"Let us make the point quite clear. It is generally understood that when a commission house has a connection among merchants in any part of the world it discourages individual attempts on the part of the manufacturer to cultivate that district on his own account. You disavow that, do you?"

"Emphatically. I agree that this has been the attitude of certain commission houses in the past, but it is short sighted. To emphasize what I say, if any American manufacturer desires to send out travelers to Australia, South Africa, South America or any country we cover, it will afford us the greatest pleasure to give him letters of introduction to all our agents, and furthermore we will instruct our agents to do everything possible to make the traveler's journey a success."

"None the less you expect the manufacturer to do his business through the commission house?"

"I do and for many reasons. For example, what manufacturer would undertake to collect all his own checks in preference to passing them through his local banker? The commission house stands in precisely the position of that local banker as regards all foreign trade, and not only guarantees the payment of all bills at shorter date than the manufacturer is willing to sell for at home, but is an acknowledged expert in all matters connected with the transit and delivery of goods in the foreign port at the least possible cost. And please bear carefully in mind that what a manufacturer can produce his goods for in America has little to do with the foreign trade; the whole question is, What can he lay these goods down in the foreign port for? Hence that most important injunction that he should see that his agency is not placed in such hands as will make use of his freight to maintain some shipping monopoly, for whenever an unnecessary dollar is added to the freight that dollar is added to the cost of the importer's goods in the foreign port.

"It is an acknowledged fact that manufacturers are generally charged higher rates of freight on goods shipped by them direct than is charged the commission houses, who constantly have in hand large quantities of all classes of freight; that is to say, heavy weight or light measurement, as the case may be, which are necessary to the economical loading of a ship. And, moreover, the commission house is necessarily in daily touch with rates of freight to all parts of the world. Further than this, the banking facilities covering a commission business are both intricate and extensive, and the methods and expenses of collecting bills in various parts of the world, I can safely say, differ in almost every instance. In other words, it would be just as practical for a commission house to undertake to run a manufacturing establishment in connection with their commission business as it would be for a manufacturer to undertake to do a foreign business himself. Innumerable interviews with manufacturers of importance have clearly demonstrated to my mind that the manufacturer is clearly alive to the fact that he is doing a business which he has little knowledge of, but, as your paper contends, this action of the manufacturer is no doubt brought about by the feeling--which the commission houses are largely to blame for themselves—that he would prefer to have his business in his own hands. Speaking from a commission house point of view, our company to-morrow would be glad to take over all the direct business that is done in America by manufacturers and take the difference they could save for their profit. I am clear in my own mind, based upon years of experience and personal knowledge, that a commission house can do this better and more economically than can any manufacturer or exporter, and if you think of it this is only reasonable. The manufacturer has other things to think of. He has to make his goods to order; he has to be continually thinking of new designs. He cannot do everything. We simply transact that part of his business on which we are acknowledged experts. The commission house should not be regarded by the manufacturer as the only channel of communication between him and his customer. He should enterprisingly push his business by sending out travelers, by mailing catalogues and generally by keeping himself in evidence.

The commission house that wisely conducts its business is content to wait, knowing that experience will prove to the manufacturer that the actual transfer of the goods can best be done by the commission house."

"Of course you make full disclosure to the buyers?"

"Here is a form of invoice which we have just adopted, and, you will observe, copyrighted, which answers your question. You notice here a complete analysis of every shipment to every customer. The original manufacturer's invoice is attached, the amount of the commission is disclosed, the cost of freight and insurance is made perfectly clear, while against each item is a code word, so that it can be ordered again by cable if required. Thus, you see, the Australian buyer knows exactly where everything is obtained and the net cost. A commission house that does not make full disclosure such as this brings itself into disrepute in the long run."

"Now tell me something about the independent traveler. How is he to set about his work in Australia?"

"Ah, now we come to the tragedy of the business. A traveler gets to Australia, opens his samples and invites the local merchants to come and see him. In my experience they are always glad to do so. They look at the samples and take a note of what things they think they will require. Perhaps the buyer remarks that this is not the season for that line of goods, but none the less he notes the number and the price. This sort of thing goes on in every trade center in Australia, and the result is that perhaps the traveler, after spending many months out there, returns home with very few orders. His firm do not understand the difficulties of the situation, and he himself is doubtless discouraged. I have known of travelers who have thrown their jobs up in despair just because they could not fill their order books. But, sure enough, if the goods are all right orders come along as the seasons open. You may say broadly that a Hardware traveler in Australia does not see his orders for many months after he has visited the place. I wish you would make this point clear to American readers, because many a good man has got back to America from Australia with a record for failure, when, as a matter of fact, he has laid the foundations of a good trade connection. I do not hesitate to recommend any American manufacturer with good articles to send his traveler out to Australia to introduce his line. So far as the Strong & Trowbridge Company are concerned, we shall do all we can to introduce him to the best customers and to help and guide him through our agents to the best of our ability."

OPPOSITION LINE TO SOUTH AFRICA.

THE PRINCE LINE, having a fleet of about 50 steamers, operating between the United States and ports in Brazil and the River Plate (Argentine Republic), as well as to Mediterranean ports, together with lines plying from England to the Mediterranean and River Plate, is about to inaugurate a new steamer line to South and East Africa, covering the country from Cape Town up to Delagoa Bay (Lourenço Marquez) as the business requires. This enterprise is in opposition to what are now known as the Conference Lines, consisting of the Hansa, Union, Bucknall, Castle and Clan lines, who have concerted arrangements regarding sailings and rates of freight.

The agents of the Prince Line in New York are the John C. Seager Company, Produce Exchange Annex, to whom applications for freight or passage should be made. The proposed sailings will be from New York to Cape Town, East London, Mossel Bay, Port Natal, Algoa Bay (Port Elizabeth) and Delagoa Bay. The first steamer announced is the "Norman Prince," direct to Algoa Bay, June 14, followed by the "Soldier Prince," to Cape Town, and the "Saxon Prince," to Algoa Bay, both July 16. At present the sailings will be monthly, increasing in frequency as the trade warrants.

The Conference Lines have an understanding by which they charge a certain premium (10 per cent. primage), which is intended to be rebated to shippers six months after the expiration of certain periods, say January and July, but the payment of which usually extends over 9 to 15 months. The object of this arrangement is, of course, to hold the shipper as a perpetual customer, the rebate being obtainable only in the event of all shipments being handled by the Conference Lines.

The Prince Line, to make their service attractive to American shippers, propose to refund this primage at once on the sailing of the steamer. By the other method, if a shipper had been shipping continuously for the whole period, except, for instance, the last invoice, and that should go to an outside line, his whole claim would be forfeited.

HARDWARE CLUB OF PHILADELPHIA.

THE second annual shad dinner of the Hardware Club of Philadelphia was held at the Falls Hotel, Westville, N. J., on Saturday, 10 inst. The occasion was a most enjoyable one. The participants numbered 46, among the out of town people being:

HENRY B. LUPTON, Oliver Iron & Steel Company, Pittsburgh.
EDWARD INGALLS and JOSEPH WEED of Benjamin Atha Company, Newark.
JOSEPH DROESCHER of H. R. Droescher, New York.
EDWARD MAGOVERN and ALBERT KILLE of Yale & Towne Mfg. Company, New York.
WM. DE B. BRUSSTAR of E. & G. Brooke Iron Company, Birdsboro, Pa.
W. P. BRAUN of Pennsylvania Lawn Mower Company.
E. PARSONS, JR., of Lalance & Grosjean Mfg. Company, New York.
JAMES FREDERIC HANDY, New York.
FRED. PEASE, Chas. Parker Company, New York.

The Philadelphia houses were well represented as follows:

T. JAMES FERNLEY and FRANK DREW of T. James Fernley.
T. B. HENDRICKSON, J. C. MCDONALD, H. MILLIGAN, H. HENDRICKSON and H. H. BRONSON of Reading Hardware Company.
J. H. VAN NEWKIRK of Russell & Erwin Mfg. Company.
L. V. WOLF of Star Lock Company.
GEO. HOLMES of C. M. Ghriskey's Sons.
N. G. PEARCE of Weston & Wells Company.
FRANK WEST of Penn Hardware Company.
GEO. BARNETT, H. SCATTERGOOD and TOM ALMGILL of G. & H. Barnett Company.
M. KOENIG of Enterprise Mfg. Company.
W. W. WATT, F. W. HUFF, AL. HUFF, J. D. GREEN, F. R. HALL, JOHN CHARLTON, W. B. CHARLTON, CHAS. MILLER, M. CORCORAN, E. CORCORAN, J. R. BONBRIGHT and S. V. COULSTON of Supplee Hardware Company.

Frank Huff acted as toastmaster. Remarks were made by Messrs. Lupton, Fernley, Ingalls, Magovern, Watt, J. D. Green and others. References were made to the jobbing consolidation and the opinion of most of those who were present seemed to be that it would be short lived.

THE AMERICAN NATIONAL WATCH COMPANY have just been organized at South Bend, Ind., of which Irving A. Sibley, who is well known to the trade from his position as a Hardware merchant and his prominent identification also with retail Hardware organizations, has been elected treasurer and director. Some of the Western daily papers, in announcing the organization of the new company, have conveyed the idea that they would dispose of their product through department stores and catalogue houses. Mr. Sibley advises us, however, that this statement is entirely erroneous. The new company have been capitalized at $1,000,000, and expect to have 500 employees within a year. Clement Studebaker, Jr., of the Studebaker Bros. Mfg. Company, is president, M. V. Beiger, president of the Mishawaka Woolen Mfg. Company, vice-president, and E. A. Bazzett, manager.

The Frank Gilber Hardware & Supply Company of Sharon, Pa., are being organized to carry on a general supply business. Frank Gilber, formerly of the Fruit-Ohl Company of Sharon, will be general manager. The new company will incorporate with $50,000 capital stock.

A. B. Neyhart, wholesaler and retailer of Shelf and Heavy Hardware and Stoves, Williamsport, Pa., is putting in a new plate glass front, and also building an addition, 19 x 61 feet.

THE SWANK HARDWARE CO.'S STORE.

THE business of the Swank Hardware Company, Johnstown, Pa., was established in 1862 by Jacob Swank, and was conducted by him until May 31, 1889, when he lost his life in the Johnstown flood. erected a temporary frame structure, 9 x 14 feet in dimensions, followed a few weeks later by a two-story frame building, which was the first permanent business house erected in the city after the flood. From this small beginning arose the need of a more roomy and modern structure, which necessitated the erection of the

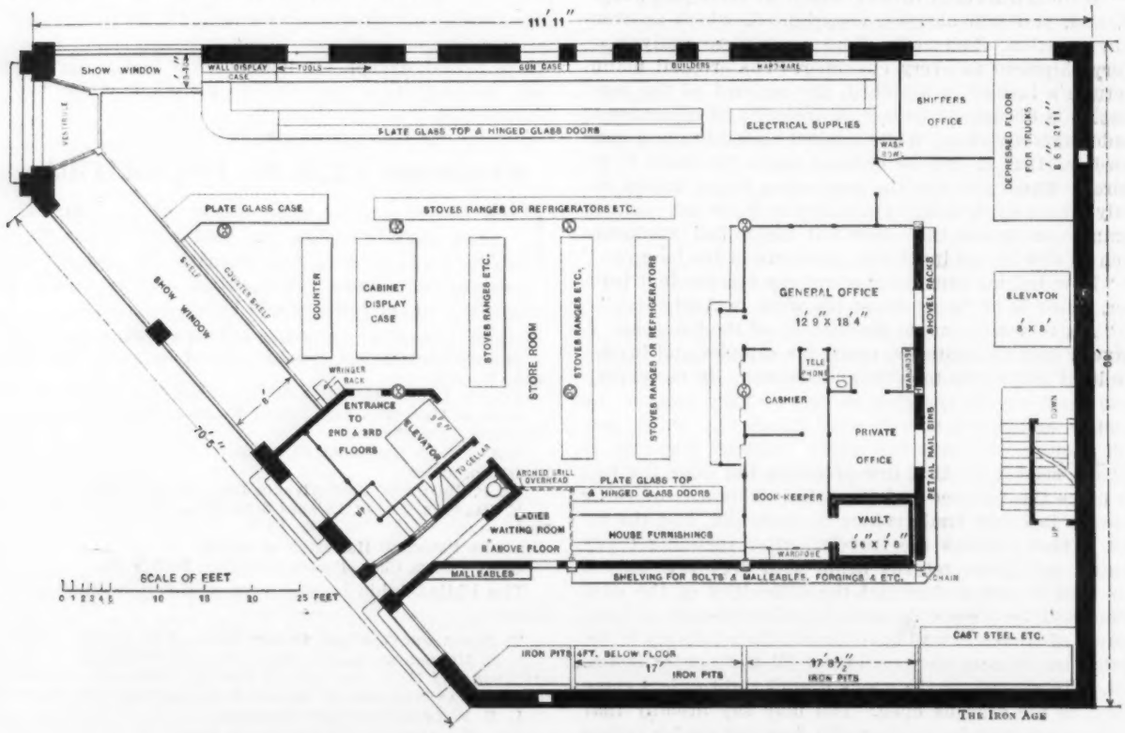

Fig. 1.—Floor Plan of Store.

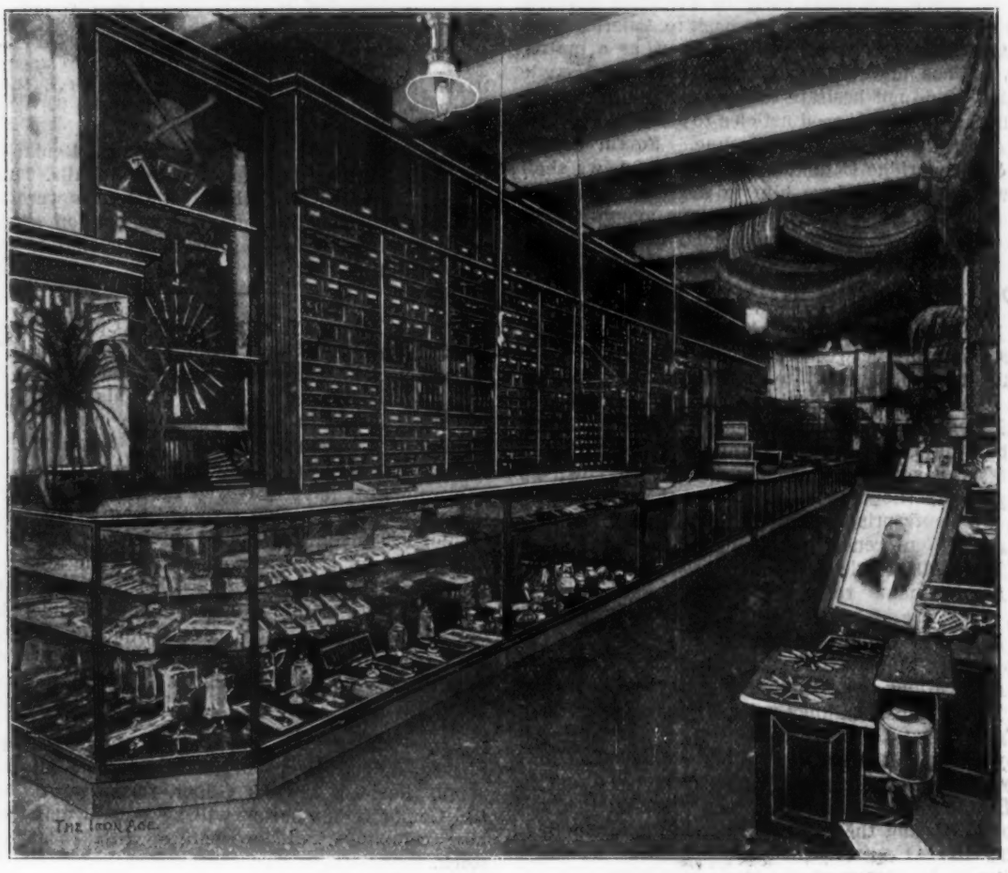

Fig. 2.—The Left Hand Side of Salesroom.

The present members of the company are Morrell Swank and Geo. W. Swank, sons of Jacob Swank, and Chas. R. Glock. The company have 38 employees on the pay roll.

Several days after the great flood the present firm present building. This is a substantial brick building, five stories high, of slow burning mill construction, located on the corner of Main and Bedford streets. The joists are spaced 6 feet apart, and floors are 4 inches thick. The first layer of the floors is 3 inches thick,

covered with 1-inch maple flooring, with fire proofing material between the double floor; in this way making it possible for a fire to be confined to one floor, in which it might originate, for a considerable length of time. The building contains all modern improvements, including a freight and a passenger elevator; the freight elevator having a lifting capacity of 4000 pounds. In addition to the regular line of Hardware, the firm make a specialty of Stoves and Ranges, Kitchen Utensils, Silver Ware, Cutlery, Sporting Goods, Iron and Steel, Wagon Material, Mill Supplies, Pipe and Fittings, Explosives and Railroad Contractors' Supplies. Fig. 1 gives a plan of the salesroom on the first floor, showing the location of the fixtures, &c. The entire interior is in natural finished oak, polished and rubbed down to a dead finish, and polished plate glass is used in all counter fronts, display cases, &c.

Fig. 2 gives a view of showcases, counters, shelving and wall display case on the left side of the salesroom. All the counters in the store have glass doors in front, swung on hinges, for displaying goods. The display portion is about one-half the depth of the counters, while the rear half is shelved for the accommodation of Hand Saws in boxes, loose Tacks in drawers and numerous other everyday articles, within easy reach of the clerks. The shelving is fitted throughout with oak front drawers made with the idea of having the size correspond with the size of the goods to be displayed and kept in them. All the drawers are made up in multiple, to fit in a space between uprights 36 inches apart, the drawers being 2 9-16, 3¾ and 6 inches in hight. As far as practicable all the drawers are sampled with the goods they contain. The shelving below the counter shelf is 42 inches high and 24 inches deep. From this to the hight of 8 feet the shelving is 18 inches deep, while above this the shelving is inclosed with a row of hinged doors for storing surplus shelf and odd goods which cannot conveniently be placed in the shelf boxes. In the front of the part of the store immediately behind the large display cases is a wall case 4 x 10 feet in size with a glass front, used for the display of Cross Cut, Circular, Hand Saws and a line of Carpenters' and Woodsman's Tools.

The Table Cutlery is displayed behind glass faced hinged doors, as shown in Fig. 3, the selling stock being kept in the rear of the doors. The Guns are displayed in a case with glass doors built in the shelving about half way down on the same side of the store.

Fig. 3.—Display of Table Cutlery.

Fig. 4.—A Section in the Front of Store.

Fig. 5.—Display Cabinet with Shelves on Top.

In Fig. 4 is given a view of a section in the front of the store, showing the arrangement of Ranges, also a part of a stand for the display of Kitchen Utensils.

A large display cabinet is shown in Fig. 5, 5 x 10 feet in size, having two open shelves on top and sides and glass hinged doors below. This cabinet is used for display of Cooking Utensils, Nickel Plated Hollow Ware, &c.

Fig. 6 shows a section of the House Furnishing Goods department, the ladies' waiting and toilet rooms, and also the entrance to passenger elevator from store. The door between shelving and waiting room leads to the Iron room. The vacant floor space is used for showing Stoves, Ranges or Refrigerators in season.

The general and private offices, also the bookkeeper's and cashier's departments, located at the rear of the store, are shown in Fig. 7.

On the floor plan, Fig. 1, may be seen the location of the Iron house and receiving room. The Iron is placed on end along the brick wall, in a pit 4 feet below the floor, thus facilitating the handling of heavy bars and allowing for long lengths. In the Iron room is also kept the stock of Blacksmiths' Materials, Bolts, Malleables, &c.

The second floor is used for the wholesale stock of

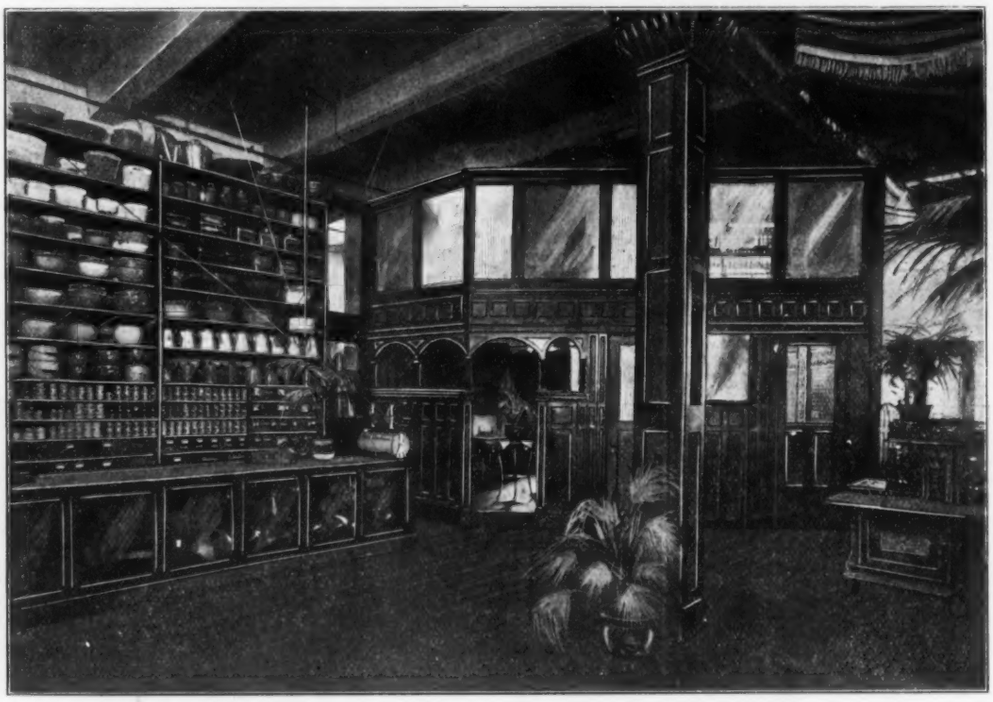

Fig. 6.—Ladies' Waiting and Toilet Rooms, &c.

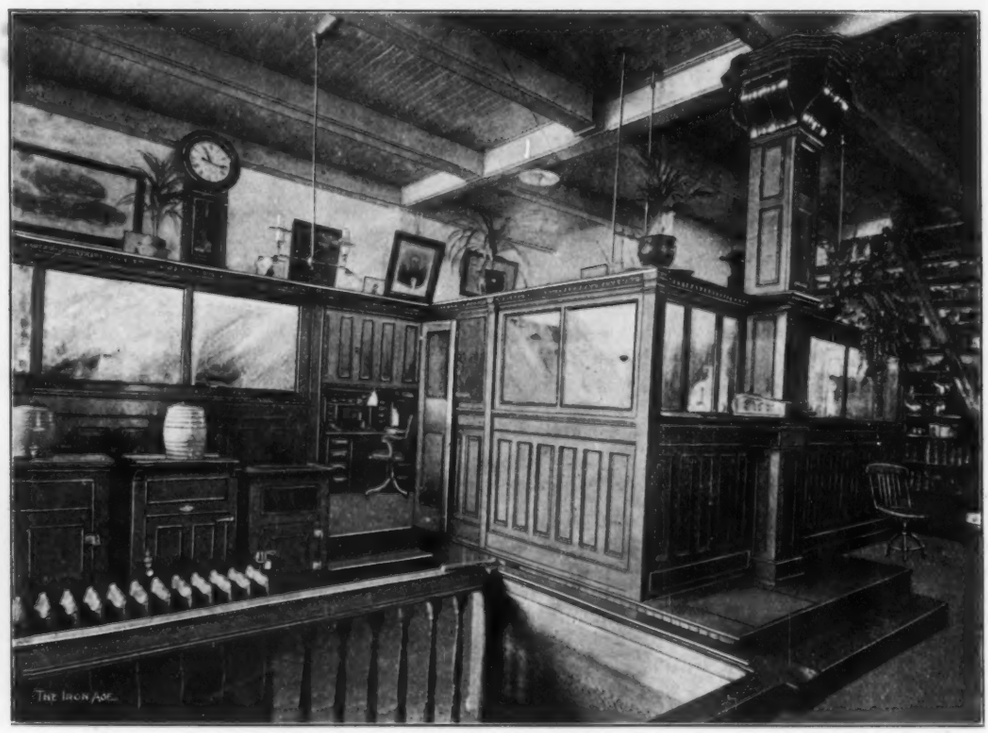

Fig. 7.—The Offices.

shelf goods, Builders' Hardware, Leather and Rubber Belting, Packing and Garden Hose. Large retail goods, such as Baby Carriages, Express Wagons, Wood and Willow Ware and Lawn Mowers, are also kept here. On the third floor is carried Wagon and Blacksmiths' Material, Wheels, Spokes, Skeins, Springs, Axles, Forges, Anvils, &c. The fourth floor is devoted to the stock of Stoves and Ranges and accessories, Floor Oil Cloth and Linoleum. The stock of Wood Pumps, Wheel Barrows, Lawn Mowers, Screen Doors, Wire Nettings, Shovels, Garden Tools, Wood Split Pulleys and surplus stock of large sizes of Glass and Wagon Wood Work is carried on the fifth floor.

The basement is considered the most valuable floor in the building, with the exception of the salesroom. In the basement is carried the stock of Iron Pipe and Fittings, Glass and Nails, Stove Repairs, Horseshoes, Building Papers and Painters' Materials. The Oils and Explosives are kept in a vault especially constructed for this purpose under the sidewalk, made with the idea of safety in case of fire. The vault is 10 x 60 feet in size, with fire proof doors.

FIRE IN HERMANN BOKER & CO.'S BUILDING.

A DISASTROUS fire broke out about 3 o'clock a.m. Tuesday, May 13, in the basement of the building 101-103 Duane street, New York, four floors of which were occupied by Hermann Boker & Co. The fire was first discovered in the basement, which, with the street floor, was tenanted by the Boorum & Pease Company, manufacturers of blank books. It was thought the firemen had confined the fire to these floors, but as they were about to leave, it was found that the flames had followed the elevator shaft to the second loft, entirely skipping the first loft. From the second loft it spread rapidly to the remaining third and fourth lofts, where great damage was done. The subbasement, first, third and fourth lofts were occupied entirely by Hermann Boker & Co., the first loft, used as office and salesrooms, being damaged by water only. They have negotiated for an office in the immediate neighborhood in the same street and are again doing business.

The second loft, occupied by A. H. Funke, importer of guns, &c., and dealer in bicycles, acetylene gas lamps and cycle sundries, was damaged by both fire and water, but Mr. Funke has rented premises directly opposite, in the first loft of 98 Duane street, and is in position to continue the business as usual. He has a stock of foreign goods in bond and in transit and such goods as are dealt in which are made here are immediately available, so that his customers' orders can be taken care of promptly.

The total loss on building and stocks of the various tenants is roughly estimated at $200,000, most of which is covered by insurance.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

Wm. Potts has sold his retail Shelf and Heavy Hardware, Stove, Tinware and Sporting Goods business in Salisbury, Mo., to Hunker Hardware Company, who will continue at the old stand. The company would be glad to receive catalogues, price-lists, &c., relating to the above lines.

W. W. Yokom has been succeeded by Yokom Bros. in the Stove, Tinware and Farm Machinery business in New Hartford, Iowa. The new firm are considering the advisability of entering the Pump, Bicycle and general repair business and would be pleased to have printed matter pertaining to it.

L. W. French Hardware Company, who recently bought out J. T. Simpson's Hardware business in Holton, Kan., have removed the stock to new quarters, which have been attractively and conveniently fitted up.

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THE RETAIL HARDWARE MERCHANTS' ASSOCIATION OF ONTARIO.

THE Retail Hardware Merchants' Association of Ontario, which was organized May 16, 1901, held its first annual meeting on the 8th inst. in Toronto. The following officers were elected for the ensuing year: E. R. Rogers, Toronto Junction, president (re-elected); Mr. Hawkins, Oshawa, first vice-president; S. Pearsall, Toronto, second vice-president; Jas. Ivory, Toronto, third vice-president; S. J. Greer, Toronto, secretary, and John Caslor, Toronto, treasurer (re-elected). The new Executive Committee comprises the above officials and Albert Welch, T. Hunter, Geo. T. Munn and M. W. Shepherd. This association, while just one year old, is doing good work and will doubtless become increasingly influential in correcting or minimizing some of the evils which confront the trade in the territory covered by it.

The following recent circular, addressed to the Canadian Wholesale Hardware Association, will be of interest as indicating the objects and intentions of the new association and the chief trade abuses from which retailers are suffering:

On behalf of the Retail Hardware Association of Ontario, we desire to thank your Wholesale Association for the privilege of meeting with your committee and discussing questions of importance to both associations.

The main object of our association is to promote the general interest of the retail dealer, and secure a more friendly co-operation among its members.

Any person, firm or corporation in the Province of Ontario engaged in the retail business of selling Hardware, Stoves, Tinware, Paints, Oils and Glass, and recognized as a regular retail dealer, may become a member of our association, and it is to be hoped that many outside members will be added to its number.

It is proposed to join our forces with the other retail Hardware associations throughout Canada and strengthen our hands in carrying out the general interests as laid down by the associations.

The manufacturers throughout the country generally have been combining to such an extent that the prices of many staple commodities are manipulated and sold so that the retailer has to pay unreasonably high prices for goods which they produce, and which he has to sell at little or no profit, and the manufacturer loses sight of his real friend and distributer and knows little of the difficulties which come to the retailer after he has paid his cash in exchange for the commodities they produced, and it is to be hoped that the formation of our retail association will help to bring us (through the wholesale houses) in closer connection to the manufacturers.

The different lines of wholesalers have felt that they, too, must join hands, to prevent as far as possible the same evils which we as retailers complain of. They have found in most cases that the combination is very beneficial to themselves, and we trust that the friction which no doubt does exist between the wholesaler and retailer will gradually die away and a more contented state of business exist.

Closer friendly business relations should exist between the retailer and the wholesaler, and it is felt that this feeling has been at times strained to its utmost extent on account of the general direct sale of goods to the consumer by the manufacturer and wholesaler at such prices as are given to the retailer, and it is certainly a very grave injustice to all dealers that travelers should be sent out by some wholesale houses to sell goods to consumers at the same prices as are quoted to the retail dealer, who in many cases is brought into open competition with the very wholesale houses from which he has to buy the goods, and consequently the margin of profit is narrowed down to nothing, and the wholesaler takes business which belongs absolutely to the retail dealer.

Employees in different warehouses have done much damage to the retail trade by selling goods "on the quiet" to their friends at wholesale prices, and this practice should be stopped at once by all wholesale houses.

The sale of goods direct to the consumer by the wholesaler or manufacturer is a matter which lies entirely in their own hands, and we look for much assistance from your association in remedying an evil which is very fast doing more than anything else to ruin the retail Hardware trade.

The manufacturer, even though he does retail his own goods, cannot exist long without the wholesaler as a central point, and in turn the wholesaler cannot exist without the retailer as a distributing agency to the consumer, and he is virtually the agent of the wholesaler, for without the retailer he could not carry on his business.

The slaughtering of different lines of Hardware, Tinware and Granite Ware by the department houses is very detrimental to the well-being of any retail Hardware business, and we would ask your association to help us in this matter, as we feel that as a body we must ask the caterer to department stores to try and see the error of his ways. And if we cannot convince him we are right we will tell him that he must choose between the department house and the retail business for future trade, and we will absolutely refuse to buy from any manufacturer or wholesaler who will allow his goods to be slaughtered in this manner.

The concessions that are granted to jobbers or small wholesalers, who abuse the privileges that are granted them, should be done away with, as it is not fair that any one who is seemingly doing a retail business should take advantage of the concessions he receives to undersell his neighbor in the same line. This especially applies in the lines of Nails, Screws and Builders' Hardware.

The retail associations throughout the States are anxious to co-operate with us, and we shall be glad to take advantage of any assistance they may be able to render us, and the fact of the Manufacturers' and Wholesalers' Associations in Canada being recognized by the same associations on the other side of the line leads us to believe that much good may come out of the fact that our different associations will be able to work together.

In conclusion allow us to say that to insure continued good fellowship in business, the manufacturer, the wholesaler, and the retailer must work together in all lines, and we feel that with the encouragement that has already been extended to our association by the wholesale trade, it depends largely on our own exertions whether we can extend the benefits we hope to derive.

SOUTHERN CALIFORNIA RETAIL HARDWARE AND IMPLEMENT ASSOCIATION.

WE have received a copy of the constitution and by-laws of the Southern California Retail Hardware and Implement Association, which, as its name indicates, is intended to embrace the retail Hardware and Implement merchants of Southern California. The officers of the association are John McFadden, president and treasurer, Santa Ana; Wm. F. Lutz, vice-president, Santa Ana; P. L. Southworth, secretary, Los Angeles. The Executive Committee comprises W. C. Barth, Corona; Geo. M. Cooley, Bernardino; E. C. Bichowsky, Pomona; S. M. McKee, Los Angeles; A. R. McCormick, Riverside; T. R. Dawe, Santa Barbara; H. L. Graham, Redlands. The association holds semiannual meetings, on the third Wednesday of February and August. The membership fee is $5, and the annual dues $6.50, $1.50 going to the support of the State association. That this association is beginning its work under promising auspices is shown by the following list of members:

Azusa, C. C. Casey Co.
Anaheim, Bird V. Beebe.
Anaheim, L. E. Miller.
Covina, B. S. Webb.
Covina, C. C. Casey Co.
Covina, A. Warner.
Compton, Mason Bros.
Corona, Barth & MacGillivray.
Corona, Thos. Glass & Sons.
Colton, Wilcox & Rose.
Downey, Martin Bros.
Elsinore, A. G. Keck.
Fullerton, E. W. Dean.
Fullerton, Rogers, Lathrop Mercantile Co.
Glendora, T. V. Wamsley & Bro.
Long Beach, W. L. Stevens & Son.
Long Beach, T. H. Brown.
Long Beach, N. C. Browning.
Long Beach, Frisbie & Saxton.
Los Angeles, C. A. Cary.
Los Angeles, Adams & McKee.
Los Angeles, Nauerth Hardware Co.
Los Angeles, Cass-Damerel Hardware Co.
Los Angeles, J. W. Hellman.
Los Angeles, Henry Guyot.
Los Angeles, E. P. Merritt.
Los Angeles, Bott Bros. & Osgood.
Los Angeles, R. C. Dresslar.
Los Angeles, Salisbury & Reynolds.
Monrovia, W. A. Crandall.
Monrovia, C. F. Moore.
Norwalk, W. Harvey Smith.
North Ontario, J. W. Hart.
North Ontario, Robert Weiss.
Ontario, Fleming & Son.
Orange, D. C. Pixley.
Pasadena, Pasadena Hardware Co.
Pasadena, Munger & Griffith Co.
Pasadena, Stevens Hardware Co.
Pasadena, Boutelle & Munson.
Pomona, E. D. Bradley.
Pomona, S. P. Twomey & Co.
Pomona, J. W. Wilkinson & Son.
Pomona, Pomona Implement Co.
Pomona, C. G. George.
Pomona, J. M. Booth.
Perris, L. A. Smith & Son.
Redlands, J. F. Dostal.
Redlands, J. N. Birbeck.
Redlands, Graham Cope Commercial Co.
Redlands, H. Gregory.
Redlands, Sering Hardware Co.
Riverside, McCormick & Ormand.
Riverside, J. G. Hansler.
Riverside, Wm. Bartee.
Riverside, Franzen Bros.
San Bernardino, G. M. Cooley.
San Bernardino, Thos. Hadden Co.
San Bernardino, C. W. Mettler.
San Bernardino, Albert Johnson.
Santa Paula, Petrolia Hardware & Supply Co.
Santa Paula, Santa Paula Hardware Co.
Santa Monica, C. D. Middlekauff.
Santa Monica, Jackson Bros.
Santa Monica, G. C. Boehme.
Santa Barbara, Roeder & Ott.
Santa Barbara, Boeseke, Dawe Co.
Santa Ana, John McFadden.
Santa Ana, Wm. F. Lutz Co.
Santa Ana, F. P. Nickey.
Santa Ana, M. Jacobson.
Santa Ana, S. C. Wright.
Santa Ana, J. S. Haywood.
San Jacinto, San Jacinto Hardware Co.
San Pedro, H. M. Dakin.
San Pedro, J. H. Hixson & Co.
San Pedro, J. A. Weldt.
Whittier, J. H. Linkletter.
Whittier, Whittier Hardware Co.

L. C. Fisher and Geo. E. Smith have formed a partnership at Sprague, Wash., in the Hardware (Shelf and Heavy), Stove, Agricultural Implement, Harness, Vehicle and Sporting Goods business. The style of the concern is L. C. Fisher & Co. They have built a new store with 80 feet front. The firm continue the business which was built up by Mr. Fisher during past years in the Agricultural Implement and Vehicle line, to which a full line of Hardware and Harness has been added.

Letters From the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Retailers' Trade With Manufacturers.

Several letters recently received from retail Hardware merchants touch upon the question as to the extent to which retail merchants find it advantageous to purchase goods direct from the manufacturers. What they say in regard to this matter is of general interest as indicating the way in which the subject is regarded by the trade at large. A merchant in New Mexico writes as follows:

Heretofore I have bought the greater portion of my goods from jobbers, but in future I intend to be more in touch with the manufacturer, believing my growing business demands it.

An enterprising house in Michigan enumerate the different lines they buy from manufacturers and jobbers respectively as follows:

We buy from factory: Wire Nails, Cutlery, Saws, Axes, Tinware, Nickeled Ware, Stoves, Paints and Varnishes, Wool, Twine, Wringers, Pumps, Hose, Haying Tools, Screen Doors, Hollow Ware, Plows, Sash and Doors, Cement, Roofing, Photographic Supplies.

We buy from jobbers: Tin Plate, Sheet Iron, Hand Farming Tools, Shelf and Heavy Hardware, Horseshoes, Glass, Oils, Tools, Building Hardware, Plumbing Goods, Rope, Pipe, Screen Wire, Poultry Netting, Guns and Ammunition, Lawn Mowers, Shovels.

We buy from both manufacturers and jobbers: Refrigerators, Registers and Enameled Ware.

A New Jersey merchant writes as follows:

It is very difficult to say what proportion of goods we buy from jobbers and what from manufacturers. It varies. We buy where we can buy the cheapest, assuming the standard of goods to be the same. When the jobber gives better prices than the manufacturer he gets the business.

Disadvantages of a Credit Business.

In discussing this subject an enterprising house in New Jersey emphasize the importance of doing away as far as possible with a credit business:

We believe there should be a concerted movement on the part of retailers to cease doing a credit business. We are aware that this is well nigh impossible where roofing and repair work is carried on, but a division of departments, resolution and concerted action on the part of dealers under a forfeiture or penalty from a central association would, we think, accomplish this. As a rule, we are not in favor of associations, but an association having for its chief object the above result would be most beneficial.

Too much of the Hardwareman's hard, honest work is frittered away, in spite of sharpest watching, in the expense of keeping and carrying accounts, to say nothing of the final losses when he seeks to collect them. It is simply an outrage what the long suffering merchant has to endure in this connection.

Inferior Nail Kegs.

We are in receipt from Hardware merchants in Illinois of the following complaint in regard to the character of the kegs in which Nails are shipped:

We have been greatly annoyed lately by the very poor kegs Nail manufacturers are using for their product. We frequently get 25 broken in a carload. Some kegs utterly collapse before they reach our store. Every time a keg is handled there is a wastage of Nails. Got out 20 kegs this morning and the floor was literally covered with Nails from cellar to back door. Have written manufacturers, and in one instance charged up for loss, and they allowed it.

BRISCOE MFG. COMPANY.

BRISCOE MFG. COMPANY, Detroit, Mich., successors to Detroit Galvanizing & Sheet Metal Works and Century Rural Mail Box Company, have recently reorganized with largely increased capital, the present capital being $250,000, paid in. The officers of the reorganized company are as follows: Benjamin Briscoe of Detroit, president; Richard Irvin of New York City, vice-president; Frank Briscoe of Detroit, secretary and treasurer, and Chas. Puddefoot of Detroit, superintendent. Mr. Irvin is the senior member of Richard Irvin & Co., exporters and importers, of New York. In connection with lines they have heretofore manufactured, such as Oil Cans, Air Tight Stoves, Rural Mail Boxes and specialties in Sheet Metal Goods, they purpose adding a line of Galvanized Ware and a number of Hardware specialties. They have lately installed a large number of presses and special machine tools, so that the equipment in their machine shop and pressroom is, they believe, one of the best in the country, the additions recently made giving them a very complete outfit for manufacturing any kind of sheet metal goods, either on contract for others or to market themselves. The Century Rural Mail Box made by the company is one of the Boxes approved of by the Post Office Department. Since acquiring this business from the Century Rural Mail Box Company last fall the company have improved it in a number of particulars, so that as now offered they are confident it fills all requirements. This Box has heretofore been almost entirely handled through agents and canvassers. The company have, however, decided that this business belongs legitimately to the Hardware trade, and they are making every effort to induce country merchants to handle the Mail Boxes, in view of the market created for them by the Government and the good profit connected with their sale. To this end they issue a circular in which particulars are given of an offer by which merchants are enabled to secure a sample of their Rural Mail Box free of charge.

CHANDLER & FARQUHAR'S CATALOGUE.

CHANDLER & FARQUHAR, 36 Federal and 131 Congress streets, Boston, Mass., have issued a 185-page illustrated catalogue and price-list of Tools and Supplies for machinists, carpenters, electricians, amateurs, &c. The catalogue is well arranged, copiously illustrated and comprehensive in the variety of goods it contains.

TRADE ITEMS.

In consequence of the death in April of N. M. Beach, former treasurer and general manager of the Bridgeport Brass Company, J. F. Kingsbury, Jr., who was secretary, has been made treasurer of the company, and W. F. Malloy, for some years manager of the New York branch, has been chosen secretary to fill the vacancy made by Mr. Kingsbury's advancement. Mr. Malloy will continue in charge of the business at 19 Murray street, New York.

Peck & Mack Company, 113 Chambers street, New York, jobbers, importers and exporters of Hardware, have been compelled to secure larger quarters in which to conduct their business, owing to its steady increase. They have now removed to 12 Murray street, where they have three floors and carry a much larger stock than formerly. This house make a specialty of job lots of Hardware.

Superior Chain Company, Marysville, Pa., have been organized with the following officers: L. A. Marshall, president; J. W. Beers, vice-president; S. S. Leiby, treasurer; J. Harper Seidel, secretary, and G. B. Walker, general manager. The company expect to make all grades of Coil Chain from 3-16 to 1 inch. Their factory will be equipped with the latest improved machinery and operations will be begun about June 1 with 50 fires.

An Experiment in Consolidation.

IN connection with the drift of things in the direction of consolidation of separate interests into a combination characterized by a unity of ownership and management there is a widespread interest in the subject. The number of lines in which the Hardware trade are concerned to which the principle of consolidation in one form or another has been applied are many, and several lines at the present time are candidates for the application of the principle. As bearing on the effect of consolidation on a line in which, like many Hardware articles, labor is a chief part of the cost, the experience of those identified with the enterprise referred to in this review may have useful lessons for manufacturers generally. It may also perhaps have some bearing on the feasibility of applying consolidation to the distribution as well as the manufacture of goods.

Among the earliest of the large industrial combinations in this country, and for a while the largest with respect to its share issues, was the United States Rubber Company, the record of whom it may be worth while to review, as an illustration of the application of the principle and for the reason that their plan of organization has been so generally followed in the formation of later combinations. It might be added that possibly the history of this company may in the end be repeated by some of the more recent consolidations.

How the Company Were Organized.

In 1892 several factories devoted to the production of rubber boots and shoes were brought under a single control, through the incorporation in New Jersey of the United States Rubber Company, with an authorized capital of $50,000,000, divided equally between preferred and common stock. Each of these factories, even if owned practically by one individual or family, had been operated by a corporation, under the laws of the State in which it was located. The stock of the new corporation was issued to the individual stockholders of the various companies, in exchange for the shares of the latter, which became assets of the United States Rubber Company. The old companies retained their corporate existence, any earnings being converted into dividends, which went to the United States Rubber Company, as the holder of all the shares. The funds thus acquired were then distributed as dividends on the shares of the United States Rubber Company.

There was thus no actual change of ownership of the factories and other properties involved. The control of each factory was left in large measure to those who had previously built it up, as proprietors, superintendents, salesmen and factory employees. There was, however, a centralized management, in the hands of a board of directors, composed of the principal owners of the properties, with the addition of legal and financial advisers. This general plan of organization and management still exists, but the results hoped for have by no means been realized, nor have the United States Rubber Company ever attained to such a position in the trade as to entitle them to the popular appellation of the "Rubber Trust."

The Principal Argument for the Consolidation

was that, while the rubber shoe industry was founded on the substantial basis of a widespread demand for its products, which was likely always to continue, and while the business as a whole had been profitable, there was room for the introduction of economies, and the common use of secret processes, each known in a single factory, so that the consolidated company, while offering to the consumer as cheap, if not a cheaper product, would be able very materially to increase both earnings and profits.

Price Cutting.

It is likely, however, that the consideration which appealed most strongly to the manufacturers—though not discussed openly—was the desirability of putting an end to the price cutting which, year by year, became more severe, until probably some business was being done at a loss. There was more factory capacity than was needed to supply the trade, and each manufacturer, in the attempt to operate his full capacity, was tempted to accept orders at any price that would secure business. At any rate, the first step taken by the United States Rubber Company, to come to the knowledge of the public, was a general advance in the price of rubber boots and shoes. It is true that, in the new lists, the prices to consumers were lower, but the "list" prices had long become obsolete, and retailers sold at prices of their own making. But the discounts to the trade were decreased, so that retailers had to pay very much more for goods than for several years previously, and had to charge for them more than their customers had become used to paying, in order to make their accustomed profits. The new company at once, therefore, antagonized some 80,000 shoe retailers, besides making of every customer who had to pay 5 cents more for a pair of "rubbers" a sympathetic reader of the newspaper attacks on the Rubber Trust. There is no reason to suppose that more than a fair price was charged for shoes; in fact, it is doubtful whether the combination has ever made in any year as much money as the constituent companies had previously made in a single year.

Competitors the Real Beneficiaries.

The real beneficiaries of the advance in prices were the few factories that had remained on the outside. They shared in the advance without earning the execration of the trade or the public. Or they might undersell the combination, which guaranteed its prices by the year, whereas they were bound by no price agreement. There was also a constant temptation for others to enter the field, particularly for the manufacture of low grade goods, such as the United States Rubber Company had excluded from their factories in the effort to establish one grade of goods to be sold at a standard price.

No Advantages Secured from Economies Introduced.

Whatever economies may have been introduced by the United States Rubber Company seem to have given them no advantage over their competitors, whose command of trade in time led to such liberal offers for the two leading concerns that they consented to join the combination. For the Woonsocket Rubber Company, capitalized at $2,000,000, and some small subsidiary interests, the United States Rubber Company issued new shares to the extent of $11,702,800, and the Boston Rubber Shoe Company, capitalized at $5,000,000, were acquired at about $13,000,000 in stock, bonds and cash. These concerns had built up an enormous trade, which they brought to the combination. The combination meanwhile elected as president the owner of two remaining factories, which, however, continued to be operated independently, though presumably not in conflict with the interests of the trust. While this covered the whole industry as it existed in 1892, the United States Rubber Company did not yet control the field.

Trouble.

The Board of Directors, composed of leaders in the trade who before had been keen competitors, worked together with so little harmony that, one by one, no less than five members withdrew and set up competing factories, some of which have become important. There were in 1892 15 factories all told; by 1900 there were 13 new factories in operation outside the trust. Overtures were then made to the new concerns, if not to join the United States Rubber Company, at least to form a new combination which should maintain a "community of interest" with them. This plan failing, a severe cut in prices was made by the United States Rubber Company, who at the same time announced a suspension of dividends for an indefinite period. The cut in prices had to be met by the "independents," and the contest is one of endurance.

The lack of harmony in the board, mentioned above, interfered with plans suggested for closing certain factories, with a view to consolidating the production in fewer establishments. It prevented a reduction in the number of high priced employees, every one of whom had some claim on some director, and so on. While the

number of selling agencies was reduced, the new quarters chosen probably were more costly and the board of officers of the consolidated company called for a new and large salary list, so that no economy in administration resulted. No saving was effected in advertising expenses, because the constantly growing crop of competitors made necessary more active advertising.

Single Buying Agency.

Nor did they realize the advantage hoped for from creating a single buying agency for crude rubber and other raw materials, since these were bought in the open market as before. In fact, it has been asserted that at times, in the pressure to keep up the payment of dividends, the big company were without resources to take advantage of a sudden drop in crude rubber. Under the old *régime*, when every factory was in the dark as to what the others were doing, there was at times an overproduction of rubber shoes, which the trust sought to guard against. During several recent winters, however, the fall of snow has been so slight as to limit the sale of goods, leading to the carrying over of as large stocks as in former times.

The rubber shoe industry, being one largely dependent upon hand labor, really offered few chances for economies through consolidation. The manufacture of 40,000,000 pairs of rubbers requires the same number of hands, with the same character and the same amount of equipment, whether carried on in few or many factories, and the same outgo for wages and material. The amount of such work that can be supervised by one superintendent is limited, so that possibly better results can be obtained by having the work scattered; at any rate, the trust owned factories in half a dozen States, each surrounded by trained work people who were attached to their homes and could not be conveniently massed together, and each factory called for the same administrative force as before.

Public Indifference to Patents and Brands.

At the outset great stress was laid upon the importance to the trade of patents and brands or trade-marks. The product of each factory had long borne some mark peculiar to it, and it was assumed that people who had bought a certain brand of rubbers for a generation would continue to do so. Great experience and long established reputation and good will, if monopolized by the trust, were expected to prevent effective competition by any new comers. But, as has been pointed out, the first competitors of the trust were disaffected members of their own house, who took away with them their experience, reputation and good will, and it was found that consumers—the customers of such great stores as John Wanamaker's, in New York, for example—cared more for quality and price than for brands, and would buy shoes even without a brand and shoes made in new factories.

Borrowing Money.

Another point made in the original prospectus of the United States Rubber Company was that the constituent companies had made profits after paying interest on borrowed money for working capital, an expense which should no longer be necessary under a union of interests. But instead of obviating the necessity of borrowing money, this means of raising working capital has continued, until on March 15 last the United States Rubber Company arranged for the issue of funding notes to the extent of $12,000,000, both for retiring innumerable loans of the constituent companies and for providing for their needs in the near future—a sum largely in excess of the combined floating debts of the companies at any time prior to the consolidation.

Profits and Dividends.

A statement by the United States Rubber Company to the New York Stock Exchange in 1892 was to the effect that the profits of the nine companies then embraced had averaged during the preceding ten years $959,499.49, and that during 1891 they had aggregated $1,181,186,65. Later the Woonsocket Rubber Company were acquired, with an enormous and profitable business, and the Boston Rubber Shoe Company, who in a single year, and in competition with the United States Rubber Company, had reported net earnings of $1,800,000. Yet the largest disbursement of dividends made by the Trust since the acquisition of these companies has been only $2,828,680. During the business year ended March 31, 1900, the total net income of the United States Rubber Company was reported at $3,007,887, and during the year ending March 31, 1901, at $189,544. No dividends have been paid on the $23,660,000 of common stock, with 1330 holders, since April 30, 1900, and none on the $23,525,000 of preferred stock, with 3022 holders, since January 31, 1901.

The Stock in Wall Street.

Almost the first step of the trust was to apply for the listing of the shares on the New York Stock Exchange, since which time trading in the shares has been reported daily. There has been a wide range in quotations—between 121 and 47 for preferred and between 65 and 10 for common stock—and generally without reference to the real value of the properties or condition of the rubber shoe business, and at times without reference to the payment of dividends. The trading involved the gradual unloading of the holdings of several of the principal directors, some of whom, as already noted, left the company and became their competitors. There will apparently be a strenuous contest for the control of the company at the next annual meeting—May 20—and the management have issued a strong appeal to the stockholders to be allowed to remain in control.

Present Financial Status of the Company.

The situation of the United States Rubber Company, in brief, at the end of ten years from their incorporation, is that they claim only 75 per cent. of the total rubber shoe trade, and, in order to strangle competition, are selling their goods at prices which make dividends impossible. The stockholders in the largest of the constituent companies hold a mortgage for $5,000,000 on the factory which they sold to the trust, and the remaining factories are pledged to secure the $12,000,000 of notes issued to refund the floating debt. The combined capital of the constituent companies at the time of their respective acquisition did not exceed $13,000,000, exclusive of the surplus account of some of the companies, and the Stock Exchange valuation of the $47,185,000 capital of the trust is $17,666,025, according to the published quotations at the opening of the current week.

DEATH OF JOSEPH W. BEST.

JOSEPH W. BEST, treasurer and general manager of the L. & I. J. White Company, Buffalo, N. Y., died on the 29th ult., at his home in that city, of pleurisy and valvular heart trouble. Mr. Best was 54 years of age and had been identified with the company for more than 27 years. He was held in very high esteem by all who knew him and had won an enviable reputation as an able and progressive business man who was thoroughly familiar with the manufacture and sale of Edge Tools and who maintained the highest traditions of honor and integrity in his methods. The funeral took place on Friday, 2d inst. Mr. Best is survived by a widow and four children.

Ninian L. Ireland, trading under the firm name of Anderson & Ireland, Light and Pratt streets, Baltimore, Md., has been succeeded by the Anderson & Ireland Company of Baltimore, a corporation just formed under the laws of the State of Maryland. The new company have a capital stock of $50,000, the following being the officers: Ninian L. Ireland, president; Wm. L. Jackson, vice-president, and Charles W. Ireland, secretary and treasurer, and will continue the Hardware business at the old stand.

Hardware Supply Company, wholesale and retail Hardware merchants, Pittsfield, Mass., are building a one-story brick addition to their store. They are also putting on a new front with prismatic glass.

AMONG THE HARDWARE TRADE.

Carl Plath, Adrian, Minn., has disposed of the business purchased by him a few months since from Mark Graves to C. A. Sands, also in the Hardware line at Adrian. Mr. Sands will run both stores separately for the present, but later intends to consolidate the two stocks in a large new building.

W. H. Sieverling has sold a half interest in his Hardware and Farm Implement business in Carrollton, Ill., to Elon A. Eldred, and the style is now Sieverling & Eldred.

B. F. Rackliffe of the Hardware firm of Rackliffe & Furber, Fairfield, Maine, has disposed of his interest in the business to C. E. Furber, who will continue the store under the style of C. E. Furber Company.

C. G. Dahlstrem & Son, Ceresco, Neb., are putting up a new brick building, 24 x 50 feet, two stories high, which they will occupy with their stock of Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

After having been in business at the same stand for 28 years Joseph E. Carr, Hardware merchant, Campello, Mass., has decided to move his store building from its present location at the head of Tremont street, to a lot on the corner of Main and Pinkham streets. At the present time the building has no cellar, but when moved to its new location a cellar will be put in the full length of the structure. The cellar will be used as a workshop and stockroom, thus allowing Mr. Carr to abolish a number of small sheds which have been used for storehouses and workshops. A short time ago Mr. Carr found it necessary to add more floor space to his store, and it was enlarged about one-third.

The Hardware and Farming Implement business of R. L. Wellborn, Cantril, Iowa, was recently burned out, with a net loss over insurance of $5500. Mr. Wellborn will resume as soon as new quarters are completed.

G. R. Westlake has purchased a Hardware business in Titonka, Iowa, and will increase the stock thus acquired. Mr. Westlake's line embraces Shelf and Heavy Hardware, Stoves and Tinware, Sporting Goods, Harness, &c.

S. A. Hathaway, Thompsonville, Mich., will hereafter devote his entire attention to the Hardware business. He handles a varied line, comprising Shelf and Heavy Hardware, Paints, Oils and Varnishes, Lime, Cement, Lath, Brushes, Doors and Windows, Glass, Sporting Goods, Agricultural Implements, with plumbing and pipe fitting department.

The Kees Hardware Company, Beatrice, Neb., have been incorporated with a capital stock of $10,000 and the following officers: F. D. Kees, president; J. A. Kees, vice-president; F. E. Kees, treasurer and manager, and Robert B. Smith, secretary. They are successors to the business of F. D. Kees, who by this change in the conduct of the business will hereafter be able to devote more time to his manufacturing interests. The company carry both Shelf and Heavy Hardware, Stoves, Tinware and Sporting Goods.

Montana Hardware Company, wholesale and retail dealers, Lewiston, Mont., have put a new front on their store and have also built an addition, 25 x 90 feet, two stories high, to accommodate their growing trade.

The F. W. Brosig Hardware Company, Navasota, Texas, have succeeded F. W. Brosig and E. L. & C. C. Ahrenbeck. The capital stock of the new company is $50,000, the following being the officers: E. L. Ahrenbeck, president; J. W. Brosig, vice-president, and R. C. Terrell, secretary and treasurer. The company will carry on a wholesale and retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Buggies, &c.

W. W. McCall has bought the Hardware and Stove business of Wm. Lee in Chatsworth, Iowa.

E. D. Patton and E. V. Abbott have entered into partnership in the Hardware business in Omaha, Neb., their store being located at 220 North Sixteenth street. The style of the new firm is Patton & Abbott.

Chapman & Hills, Lorain, Ohio, have been succeeded by City Hardware Company, who have been incorporated with a capital stock of $20,000. They are dealers in Shelf Hardware, Stoves, Tinware, Farm Implements and Sporting Goods, also slating and sheet metal work, plumbing, heating, &c.

W. M. Smelser has succeeded S. J. Fair in the Hardware, Farm Machinery and Buggy and Wagon business in Rockville, Neb. Mr. Fair has retired from business and removed to Kearney, Neb.

The name of the Ballew-Laney Lumber Company, Edina, Mo., has been changed to Metz-Chadwick Lumber & Hardware Company and the capital stock increased to $25,000.

E. P. Tinker and A. A. Kleber, Hardware and Farm Implement merchants, Humboldt, Neb., have consolidated their interests under the style of Tinker & Kleber.

I. S. Knowles & Sons have succeeded I. S. Knowles in the Hardware, Agricultural Implement and Furniture business in Kingsley, Iowa.

Dodge & Erk, Honesdale, Pa., have purchased the W. W. Weston double store building and will remodel the front and interior, after which they will occupy the first and second floors and basement with their Hardware business.

Tracy-Roberts Hardware Company, Carlsbad, N. M., are making extensive alterations in their establishment, with a view to largely increasing their facilities.

Ross Bros. have succeeded William Ross in the Hardware, Stove and Agricultural Implement business in Alden, Kan.

G. E. Snyder, Mt. Ayr, Iowa, has admitted a partner in his retail Hardware, Stove and Grocery business, and the style is now Snyder & Campbell.

C. E. Smith & Son have bought the Buchanan Hardware business at West Branch, Iowa, and are continuing at the old stand.

Oklahoma Hardware Company, Oklahoma City, O. T., have been incorporated with a capital stock of $100,000. They will do an exclusively wholesale business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, &c. They are now erecting a modern warehouse, 75 x 200 feet, with a private railroad switch 200 feet long. They expect to have the warehouse completed before the end of May.

J. E. Otto has lately entered the Hardware and Lumber business at Preemption, Ill.

Reineke & White have succeeded Henry Reineke in the Hardware, Stove, Farm Implement and Sporting Goods business in Henryetta, I. T. The firm have doubled the amount of stock formerly carried and report a very satisfactory trade, as the new country is fast opening up.

Petersen & Schoening Company, Council Bluffs, Iowa, have been incorporated with a capital stock of $40,000, succeeding Petersen & Schoening in the wholesale and retail Hardware, Stove, Sporting Goods and Furniture business.

E. J. Fuller, dealer in Hardware, Stoves, Agricultural Implements, Sporting Goods, &c., Kendall, N. Y., has lately moved into a new store.

Elkin Hardware Company, Elkin, N. C., wholesale and retail merchants, will build a new store, which will be up to date in all particulars. It will be 25 x 200 feet in dimensions and two stories high.

Chas. M. Witter has succeeded Witter Bros. at Guthrie, O. T. Mr. Witter carries a general line of Hardware in connection with Harness, Tinware, Dry Goods, Groceries, &c.

R. Scott, dealer in Hardware, Stoves and Factory Supplies, Muncie, Ind., has just taken possession of a new building, by which his facilities for carrying on business have been materially improved. The building is 30 x 110 feet and has two stories and basement.

John G. Fort has succeeded Woodward & Fort, Fairy, Texas, in the general Hardware and grocery business.

J. R. Mitchell, formerly for 15 years in business in Lathrop, Cal., has removed to Lodi, where he has opened up a new store in which he handles Shelf and Heavy Hardware, Agricultural Implements, Stoves and Blacksmiths' Supplies.

Hamilton & Co., Valley Stream, N. Y., have dissolved. L. Pelissier is successor at the old stand.

Hadley & Bower, Trumansburg, N. Y., have disposed of their business to Stover Hardware Company.

O. M. Curtis, Goshen, Ind., has largely increased his facilities for handling Hardware, Farm Implements and Vehicles by leasing the premises adjoining his former store.

Tracy, Van Vliet & Russell, Sherburne, Vt., have been succeeded by Tracy & Van Vliet, Mr. Russell having disposed of his interest in the business to his partners. Messrs. Van Vliet and Tracy have sold their interest in the Holton Hardware Company to Mr. Russell, who will manage that concern.

Humphreys-Davidson Hardware Company are successors to Huffard & Brown, Wytheville, Va. They have very much improved the store room by putting in steel ceiling, running shelving the full hight of the emporium and putting in rolling ladders. They have also doubled the stock formerly carried and are now in good position to carry on the wholesale as well as retail business.

Lester Bros. have succeeded M. Lester in the retail Hardware, Stove, Seed and Grocery business in Hale, Mo.

Pasadena Hardware Company, Pasadena, Cal., have been incorporated with a capital stock of $20,000 and the following officers: Joseph Welsh, president; R. S. Roberts, vice-president, and W. S. Windham, secretary and treasurer. The company handle Builders' and House Furnishing Hardware, Stoves, Agricultural Implements, Chimney and Sewer Pipe and Plumbers' Supplies.

Orange Hardware Company, Orange, Texas, have been succeeded by Orange Hardware & Implement Company, who will continue at the old stand. The company comprise M. V. Anderson, J. H. Bland and W. L. Anderson.

J. D. Hennessey has sold his Hardware store in Grafton, Neb., to Humphrey & Richards.

L. A. Doughty & Co., Hardware, Stove, Agricultural Implement and Sporting Goods merchants, Yarmouth, Maine, have removed to new quarters.

Haggard & Son have lately commenced business at Sarcoxie, Mo., as dealers in Shelf and Heavy Hardware, Tinware, Sporting Goods and Mining and Blacksmiths' Supplies.

Barr & Keshler have disposed of their Hardware, Stove and Sporting Goods business in Pleasanton, Iowa, to A. M. Haag, who has added these goods to his furniture and drug stock.

A. Hughes of Hughes & McFarland, Hardware dealers, Newmarket, Iowa, has disposed of his interest in the firm to B. H. Hughes. The firm style will continue without change.

Gray & Mudgett are a new firm in the Hardware, Farm Implement and Plumbing and Tin business, at Essex Junction, Vt. The firm is composed of H. N. Gray of Cambridge, Vt., who has been in the Hardware business at that point for the past 20 years, and R. O. Mudgett, who has been Mr. Gray's head clerk for 12 years. Mr. Mudgett will manage the store.

W. D. Post has sold his Hardware, Stove, Farm Implement and Sporting Goods business in Slaterville Springs, N. Y., to W. A. Ferguson, who will continue at the old stand.

MISCELLANEOUS NOTES.

Barn Paint.

George W. Pitkins Company, Chicago, who have been making a barn paint for over a third of a century, advise us that their product is being more and more recognized as a staple article by merchants throughout the country, displacing the old style product made by mixing Venetian red and linseed oil. The company state that they are selling their paint at a price which gives the dealer a good profit and that the paint is sold to but one dealer in a town. A point is made of assisting the dealer in distributing the goods by furnishing him with cuts, color cards and attractive hangers for advertising the paint.

Wire Fencing.

The Illinois Wire Company, Monadnock Block, Chicago, are calling attention to their manufacture of ornamental fencing. The pickets are made of Bessemer steel rods, galvanized, so formed that a curve in the wire forms the tops of the pickets and each succeeding picket interlaps and supports the previous one. In this manner, it is stated, liability of having tops bent, thus destroying the otherwise artistic effect of wire fencing, is overcome. The bottoms of the pickets are also curved, there being no rough or ragged edges at either top or bottom. The pickets are bound together by from six to nine cables, each cable being formed of two wires joined together by a right and left hand expansion and contraction twist. The twist coming between each picket holds the horizontal cables and pickets apart at the proper distance, at the same time acting as a strong spring, expanding and contracting with the variation in temperature. By this method the fencing is always on tension, preventing any sagging.

In the stock or hog fence the same principles are employed—that is, the two wires which compose the cable are twisted together in the peculiar right and left hand expansion and contraction manner. The twist comes between the stays, holding the cable and stays apart at the proper distance, acting as a strong spring and preventing any sagging. The stays are upright wire and are bound together by from 6 to 11 cables, which increase the strength and durability very materially. The company claim that this is the only wire fence which stands severe winters year after year without breaking, at the same time remaining perfectly tight during the summer season. The fence can be constructed fine and close enough for pigs and for poultry, high enough for horses and strong enough for cattle.

Pleuger & Henger Mfg. Company.

Pleuger & Henger Mfg. Company, St. Louis, Mo., have added to their line California and Chicago patterns of hose valves, Siamese hose connections and compression sill cocks, which they are now making and are prepared to supply to the trade.

The Bullock Mfg. Company.

The Bullock Mfg. Company of Chicago, Ill., are placing on the market metal and engraved name plates, the product of the Bogue & Crowe Mfg. Company. A new process has been employed to make the plates superior to those previously sold, while a reduction of 20 per cent. in prices is a further recommendation to the trade. The plates are made in various styles of neat and attractive design.

The New Morrison Three-Wheel Riding Lister.

The Morrison Mfg. Company, Ft. Madison, Iowa, are manufacturing a three-wheel riding lister, to which they are calling special attention. Any kind of work that can be done with walking machines or two-wheel machines, it is remarked, can be done with this three-wheel machine, and easily and to good advantage, the machine being referred to as comparatively lighter in draft. One of the important features of the lister, it is pointed out, is the fact that there are no covering shovels behind the drill, and that thus the objection is overcome of raking into the middle of the row the top dirt, which contains whatever stray weed seed there may have been in the ground, thereby planting the weeds on top of the corn and giving them the first chance to come up. Last season the company demonstrated in the field, they state, that corn planted with their lister without covering shovels would come up several days in advance of the weeds, thus presenting a much cleaner appearance.

New Lamps

Edward Miller & Co., Meriden, Conn., and 28-30 West Broadway, New York, have now on exhibition a large number of handsome new designs in lamps for various purposes. There is a large assortment of hanging lamps in new finishes, one of which is a fine green, another a rich shaded red, together with old brass effects, Ionian red and a deep green that harmonizes with almost any interior decoration. These finishes are on brass bases. The lamps take 14-inch opal plain or decorated shades, and have bands pierced so that they can be completed with glass prisms if desired, the latter decoration being especially effective in connection with the export trade. The new table or reception lamps range in size from 12 to 24 inches high to the top of the burner. These to a great extent have the same color effects as found in the hanging lamps. There are richly ornamented as well as plain designs. One is a mat green with metal parts finished in Etruscan gold. Another is in spun brass base with cast feet, the two parts being finished in two colors of brass—one bright and the other an antique finish—for contrast. There are in all about 75 styles from which to make a choice. Another new feature in lamp goods is the electric portables or table fixtures, of which there are about 24 new styles and patterns. These are used the same as the gas portables, except that instead of conveying gas through a tube the electric current is conducted through wires from the chandelier or other source of supply. A new feature in this portable is a beaded chain, by a pull of which the lamp is lighted, another pull extinguishing it.

Mullins' Sheet Metal Boats.

W. H. Mullins, Salem, Ohio, has issued a very artistic catalogue of stamped and embossed sheet metal goods. It is copiously illustrated with tinted views of tops and sides of boats, also of boats in use. The boats shown include duck boats, with or without air chambers, which may be supplied with folding centerboard, rudder, mast and sail; yacht tender or dingey, double-ender tender or fishing boat, which may be supplied with rudder, folding centerboard and sail; Indian canoes and sectional canoes. A portion of the catalogue is devoted to what purchasers have to say of these boats.

Never Break Forged Steel Garden Trowels.

The Never Break forged steel garden trowels made by the Avery Stamping Company, Cleveland, Ohio, are referred to as being made from high grade materials. The blade is formed by a special process and the handle is made of select hardwood, turned to the company's designed pattern. It is pointed out that the trowels are extra strong, especially at the point where the handle is joined to the blade, this being accomplished by making an extension of the blade serve as the socket for the handle, the metal being forged around the handle and then made tight by a steel pin 3-16 inch thick with which the two parts are riveted together. The trowels are packed either in bulk, one gross in a case, or they will be furnished in boxes, each containing one dozen.

Phono-Electric Wire.

The Bridgeport Brass Company, Bridgeport, Conn., and 19 Murray street, New York, have just issued for gratuitous distribution a 38-page illustrated booklet entitled "Phono-Electric Telephone and Telegraph Lines," the material of which has been prepared by an eminent electrical authority. Various reasons why Phono-Electric hard drawn copper wire, one of their specialties, makes the best working lines for electrical transmission, are given, one of which and vitally important is the clear, sharp signal transmitted. Another important factor is the great tensile strength and high conductivity of this wire to meet the requirements of lines, including also trolley wires, that must be kept in first-class operating condition for every hour of the year. The tensile strength of this wire is said to be twice as strong as soft drawn copper and one and a half times as strong as the best grades of hard drawn copper. It is stated that it will stand long spans across rivers, extremes of temperature and loads of snow and sleet with more than the reliability of steel; also that it is free from liability to kink or snap and will successfully withstand nearly three times as many complete turns in a given length as hard drawn copper.

The Lane Timber Hangers.

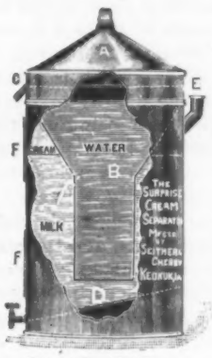
The W. J. Clark Company, Salem, Ohio, makers of Lane's patent joist and timber hangers, issue an illustrated price-list of these hangers, which gives the width and thickness of the steel plate from which the many sizes are made. A table is included giving the load which each respective size of hanger sustains without showing any sign of bending or yielding in any way. The manufacturers state that Norway pine timber was used in the tests, and it was found that the timber would mash before the hangers would bend or move. An example is given where a hanger for a 10 x 14 timber was loaded to 50 tons before the timber began to crush and the hanger to straighten.

Clover Leaf Ventilators.

E. Van Noorden Company, 944 Massachusetts avenue, Boston, Mass., are manufacturing Clover Leaf ventilators for use on theaters, churches, halls, factories, dwellings, &c. The ventilator is made of sheet metal, usually galvanized iron, sometimes copper, and consists of a vertical pipe or barrel, surmounted by an overhanging three-gabled roof, with open vertical gables. Opposite each gable is a shield (or Clover Leaf) to deflect the wind. It is explained that when the wind blows horizontally it strikes the shield and draws the internal air out of the barrel by suction, the exit being at the spaces between the gables and shields; also that when the wind is blowing downwardly, it strikes the gabled roofs and is deflected outwardly, making a suction in the barrel and emptying the internal air at the bottom of the shields. The ventilator is referred to as being built with enough spread to insure an exit capacity equal to double the area of the barrel, thus providing for the discharge of all the air in the barrel at once.

The Surprise Cream Separator.

The Seither-Cherry Company, Keokuk, Iowa, are offering the cream separator shown herewith. The letter A represents the cover and strainer; B, the inside reservoir; C, the overflow tube; D, the sloping bottom; E. the filling tube, and F F, the glass gauges. The separator is referred as being of good heavy tin and durable. In operation the separator is placed on a box or platform



Patent Applied For.

The Surprise Cream Separator.

that is high enough to permit a bucket to be placed under the faucet. The inside reservoir is filled with cold water, and the cover or strainer is placed in the tube of the outside can. The milk is then poured into the outside can and allowed to stand for 30 minutes. Cold water is then poured in, which will force the warmer water out through the overflow tube. The changing of the water is to hasten the separation. It is stated that the separator is not complicated; that the inside can may be lifted out easily; that it is easily cleaned, and that if used as directed it will separate cream from milk in from three to five hours.

The King Carpet Stretcher.

The carpet stretcher shown herewith is offered by the W. E. Sitterly Novelty Works, Auburn, N. Y. The stretcher consists of a metal bar, swiveled to a wooden cross head. The small knobs on the top of the bar are round, between which semicircles, underneath the round part of the handle, work. The teeth underneath the wooden cross head are on a slant so as not to tear the carpet. The handle is center draft, so that it locks and

The King Carpet Stretcher.

holds itself wherever the operator stops the handle. In use the hook at the end of the bar is driven in the floor near the base board, and the teeth in the cross head are pushed into the carpet. The handle is then turned to the right, which draws the cross bar toward the hook, thus stretching the carpet. The carpet is tacked, the stretcher is then moved along, and the operation is repeated. The cross head working on a swivel so adjusts itself to the carpet that the carpet is stretched where it most needs it. The manufacturers state that every piece of casting is warranted, and that they will replace any that break.

Fred. H. Taylor is successor to Taylor & Taylor in the Shelf Hardware, Stove and Plumbing business in Indianola, Iowa.

Griffon Safety Razor.

A. L. Silberstein, 459-461 Broadway, New York, have greatly improved the character of their Griffon safety razor, as shown herewith, Figs. 1 to 3. Fig. 1 illustrates the frame complete with razor blade ready for packing in an enameled and lithographed round metal box 2⅝ x

Fig. 1.—Griffon Safety Razor; Frame and Handle Complete.

1⅜ inches, with the handles both for the frame and for holding the blade so it can be stropped in the ordinary way on a razor strop, by any who do not wish to buy their Griffon automatic strop machine and strop combined. Fig. 1 shows, 1, the swing gate for easy cleaning; 2, safety adjustable shoulders; 3, automatic self adjustable spring clamps; 4, double action spring catch

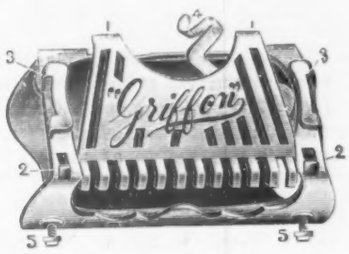


Fig. 2.—Detail View of Frame.

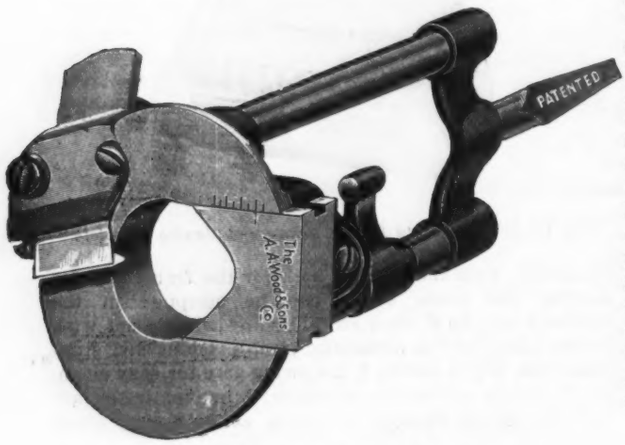
which holds blade in position, and, 5, screws for adjusting shoulder for either close or ordinary shave. Fig. 3 represents the razor complete, actual size, with one of the two handles. In the end of the second section of the handle partially shown in Fig. 1 is a small rectangular slot with which to turn the two adjusting screws, 5, seen in Fig. 2, so that the individual can have a very close shave or the reverse, as he chooses; also for accommodating the frame to a worn blade, or a blade which for

Fig. 3.—Razor as in Use.

any reason is not of exactly uniform size. In addition to the regular mode of marketing the razor they are putting the razors up in a variety of leather cases holding from two to seven blades, with and without the automatic stropping machine.

Wood's Ideal Hollow Auger No. A4.

The accompanying cut represents an adjustable hollaw auger put on the market by the A. A. Wood & Sons Company, Atlanta, Ga. The shank, depth gauge and V-block are made of steel, the spindles are cold rolled steel, and all screws are milled from steel bars, all screws and wearing parts being hardened. The knife clamp is constructed so as to prevent the knife slipping



Wood's Ideal Hollow Auger No. A4.

The auger is not designed to take the place of any tool having a range of adjustment from ¼ to 1¼ inches, but to provide a tool which will cut tenons from 1⅛ to 1½ inches in diameter, and of such length as may be desired. The auger is referred to as moderate in price, and as being simple, durable and accurate.

The U. S. Steel Washing Machine.

The accompanying cut represents a galvanized steel washing machine put on the market by the United States Washing Machine Company, Chicago, Ill. The washer is of the rotary type, and the power is trans-

The U. S. Steel Washing Machine.

mitted, it is remarked, in a manner as novel as it is effective. The speed of the pin wheel is variable, starting and stopping slowly, the speed being greatest midway between these points. It is explained that the variable speed secures the greatest possible agitation of the water, that it produces the smallest amount of wear on the parts and that it does away with the jar incident to the constantly changing direction of the pin wheel. The machine is right or left handed, as turning the crank in either direction produces the same motion of the pin wheel. The cover is made of two-ply wood and is secured to bolted hinges. When the cover is lifted it carries the fly wheel to one side, giving ample room to get at the interior. The sides and bottom of the washer are corrugated, producing a wash board surface. The joints are double seamed. There are three galvanized hoops securely riveted; the top hoop overlaps the top edge of the tub to make a smooth finish and to add to the general strength of the tub. The tub is galvanized after it is made, which is alluded to as an important feature. A fine quality of heavy sheet steel is used, it is stated, and after being put together and carefully seamed, closing all joints and uniting all parts, including the hoops, leakage is impossible. The wringer space will hold a large size wringer. The cover and legs are made of hard wood, nicely finished. The legs are secured by riveted cleats, and the machine weighs 65 pounds, so that it can be lifted and moved around. It is pointed out that the washer can be thoroughly cleaned, that it can be left in the sun all the week in the hottest and dryest climate; that there is not a crack for dirt to lodge or germs to collect; that the washer will not splinter or fall to pieces, and that it is always clean, sweet and satisfactory.

The Bullock Home Sharpener.

The accompanying cuts illustrate the Bullock home sharpener, manufactured by the Bullock Mfg. Company, 183 South Clinton street, Chicago, Ill. The sharpener is

Fig. 1.—The Bullock Home Sharpener.

made of cold rolled steel, nickeled and polished, and is designed to be readily attached to any sewing machine. The grinding surface, which is of emery, is ⅝ inch wide, and it is claimed to be as durable and practical as the

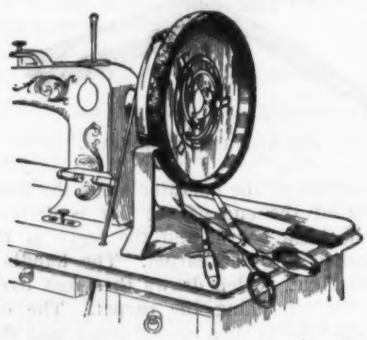


Fig. 2.—The Sharpener Attached to Sewing Machine.

wheels used in factory work. The simplicity, durability and practicability of the sharpener are referred to by the manufacturers.

E. J. Smith & Son, Whiting, Iowa, are building an addition to their Hardware store, which will be devoted to their Buggy and Carriage stock. The addition is 60 x 24 feet.

Asparagus Knife No. 94.

The accompanying cut represents an asparagus knife just brought out by the Goodell Company, Antrim, N. H., to meet a demand for a superior article. The knife is forged from solid bar steel, carefully ground and tempered, and has a double cutting edge. The blade and handle are proportioned to give a well balanced tool, to enable the operator to work with much less fatigue. The blade is polished bright and is trimmed in black enamel.

Asparagus Knife No. 94.

The handle is of birch, with a strong brass guard ferrule. The knives are packed one dozen in a box.

The Elterich Rifled Bullet Shells.

The J. Stevens Arms & Tool Company, Chicopee Falls, Mass., are offering rifled bullet shells, as shown in the accompanying cuts. These are not auxiliary barrels, it is remarked, but shells made of brass, and so constructed as to fit any shotgun barrel of 10, 12 and 16 gauge. Into the shell is fitted a rifled steel

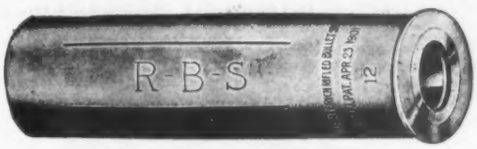


Fig. 1.—The Elterich Rifled Bullet Shell.

barrel, chambered for the insertion of small bullet cartridges. The outer shell is slotted and bulged outward to produce a springy effect, so that if the shell is pushed into the barrel of a shotgun it will make a tight fit and not loosen, and to prevent its falling out or shifting. The rifled steel barrel of the shell is provided with an extractor, which is constructed so as to adjust itself to

Fig. 2.—Showing Extractor.

any ejector, common or automatic, found on single or double shotguns sold in the market, and by opening the gun will throw the bullet cartridges from the barrel in the same way that an ordinary shell is extracted. With proper care, it is stated, thousands of shots may be fired with one of the shells. Shell No. 1, Fig. 1, is for repeating shotguns only, made only for .32 short S. & W. smokeless cartridges, in 10, 12 and 16 gauges. Shell No. 2, Fig. 2, is for all single and double barrel shotguns in 10, 12 and 16 gauges, made only for .32 shot S. & W. smokeless. These shells are each 2½ inches long, and are practicable up to 100 yards. Shell No. 3, Fig. 3, is for single and double barrel shotguns in 10, 12 and 16 gauges, made for the following smokeless cartridges: .25-20 Stevens, .32 short S. & W., .32 Colt's new police, and .30-20 Winchester, in 12 and 16 gauges. It is also made for .38 S. & W. special smokeless in 10 gauge shell. No. 3 is practicable up to 200 yards.

Stearns' Adjustable Hollow Auger No 44.

E. C. Stearns & Co., Syracuse, N. Y., are putting on the market the hollow auger shown herewith. A feature of the auger is that all adjustments are made instantly and without the use of tools. The disk may be revolved to the size required by putting it forward and turning it to the right or left, when the auger is ready for immediate use without resetting the knife. If it is ever desired to move the knife forward or backward it may be accomplished by turning the knurled head adjusting screw, which is made with a collar fitting a corresponding slot in the knife, holding it firmly in position. The length of tenon is regulated by the adjustable stop. The body of the auger is finished in black japan, while the bright parts are polished and nickeled. It cuts tenons of any size in sixteenths from ⅝ to 1 inch.

Stearns' Adjustable Hollow Auger No. 44.

Bunting-Stone-Taylor Hardware Company, Kansas City, Mo., have been incorporated. They have purchased the stock formerly carried by Thornburrow & Stone, consisting of Builders' Hardware, Contractors' Supplies, &c., at wholesale and retail. The facilities of the establishment have been largely increased under the new organization. John C. Stone is president of the company, Richard Taylor vice-president, and Geo. H. Bunting secretary and treasurer.

Fig. 3.—Shell 4 Inches in Length.

Le Touriste Safety Razor.

James H. Flagg Cutlery Company, 29 Murray street, New York, are sole agents in the United States for the Le Touriste safety razor, made in France, and here illustrated. This outfit is furnished complete with two fine Damascus finished blades, and a handle as shown in Fig. 2, for stropping, which can be done on any good razor strop by simply turning the razor on the back by

Fig. 1.—Le Touriste Safety Razor.

Fig. 2.—Handle for Holding Blade When Stropping.

a movement of the wrist and not turning it in the hand. Attention is called to the simplicity of this razor and the ease with which it can be stropped and cleaned. The blade is held in position by the curved spring seen at the top of the cut and adjustment is made by the round thumb screw at the left, which, however, is only necessary after the blades have been reground a number of times, which with average use would not occur in some years.

Wizard Moistener.

The Delta Mfg. Company, 150 Nassau street, New York, are introducing their Wizard moistener for desk

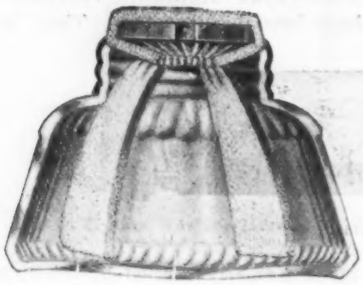


Fig. 1.—Sectional View of Wizard Moistener.

and office use, as here illustrated. This article is designed for the use of bankers, cashiers, pay clerks, ticket sellers and business people generally, as a substitute for a sponge or less cleanly means of moistening stamps, envelopes, wrappers and labels or wetting the fingers when counting bills. In use the glass reservoir is filled with water, the two white wool felt wicks reaching to the bottom conducting the moisture by capillary action

Fig. 2.—How It Is Used.

to the felt pad of the same material held in place by a cork base, so that the cushion top is always moist as long as there is any water in the reservoir. It can be refilled in an instant by unscrewing the top. They are made in sizes 1, 2 and 3, the first being large, for office desk use; the second, a fancy design in opal, for ladies' desks, and the third, medium size, for home purposes.

The Sayres Corn Grater.

The accompanying cuts represent corn graters manufactured by Chas. W. Sayres, York, Pa., McClellan & Gotwalt Company, of the same city, selling agents. The

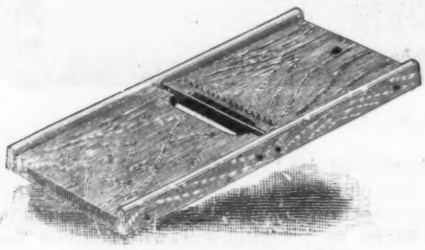


Fig. 1.—The Sayres Corn Grater.

grater is neatly made of clean poplar wood, 5 x 11 inches in size, having a tinned steel scraper and steel cutters. It is designed to remove fresh corn from the cob, for making fritters, puddings, &c. With the grater, it is explained, the grain and milk of the corn are removed

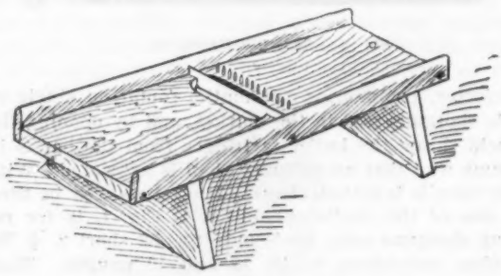


Fig. 2.—The Sayres Grater with Feet.

while the hull remains on the cob. The graters shown in the illustrations are the same, except that the one in Fig. 1 is intended to use in a bowl or similar vessel, while that in Fig. 2 is designed to be placed over a low vessel.

Huske Hardware House Company, Fayetteville, N. C., have purchased a lot fronting on Hay street (the principal thoroughfare), 86 feet, and running through to Franklin street, 330 feet. On a part of this site they have put up a warehouse, two floors, 41 x 76 feet, and third floor, 14 x 76 feet, which they will use to store car lots of building materials and heavy goods.

Current Hardware Prices.

REVISED MAY 13, 1902.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated represent those current in the market as obtainable by the fair retail Hardware trade whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓@33⅓&10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent discount.

Cut Prices.—*In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4, 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₱ doz. $3.00...33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....25&5%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Armand Hammer, Wrought ₱ lb 8¼@8¾¢
Buel Patent Trenton.....₱ lb 9½@9¾¢
Eagle Anvils.....₱ lb 7¼@7¾¢
Hay-Budden, Wrought.....9¢
Horseshoe brand, Wrought.....9@9¼¢

Imported—

Peter Wright's.....9½@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz.....25%
Smaller Lots.....20%
Lots of 3 doz.....30%

Augers and Bits—

Com. Double Spur.....70@70&10%
Boring Machine Augers...70@70&10%
Car Bits, 12-in. twist.....60@60&10%
Jennings' Pattern
Auger Bits.....50&10&5@60%
Ford's Auger and Car Bits.....40&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list....40%
No. 30. R. Jennings' List.....50%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits 15&10@15&10&5%
Mayhew's Countersink Bits.....45%
Pugh's Black.....30%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....50&10%
Snell's Car Bits, 12-in. twist.....60%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....65@65&5%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₱ doz., $26; No. 2, $18.....50&10%
C. E. Jennings & Co., Steer's Pat.....33⅓%
Swan's.....60%

Gimlet Bits—

Common Double Cut..gro. $2.25@2.75
German Pattern.....gro. $4.00@4.75

Hollow Augers—

Bonney Pattern, per doz. $11.00@11.50
Ames.....25&10%
New Patent.....25&10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's.....40%
Steed's.....40%
C. E. Jennings & Co.:
L'Hommedieu's.....15&10%
Watrous'.....40%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered..gro.63@68c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent.....gro. 31@34c
Unhandled, Shouldered..gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, factory brands...$6.00
First Quality, jobbers' brands...$5.75
Second Quality.....$5.00@5.25

Axle Grease—See *Grease, Axle.*

Axles—

Iron or Steel.

Concord, Loose Collar....4½@5c
Concord, Solid Collar....4¾@5¼c
No. 1 Common.....3½@3¾c
No. 1 Com. New Style..3¼@4c
No. 2, Solid Collar.....4¼@4½c
Nos. 11 to 14.....70@70&10%
Nos. 15 to 18.....75@75&10%
Nos. 19 to 22.....75@75&10%

5% cash 10 days.

Boxes, Axle—

Common and Concord, not turned..
lb. 4¼@4½c
Common and Concord, turned.....
lb. 4¾@5c
Half Patent.....lb. 8@9c

Balances—Sash—

Caldwell new list.....50%
Pullman's.....60%

Spring—

Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%
Pe ouze.....50%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb..
2¾@3c

Beams, Scale—

Scale Beams, List Jan. 12, '82.40&10%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.: ₱ gro.
No. 0 Rival.....$4.50
No. 10 Dover Family Size.....$5.00
No. 15 Dover Hotel Size.....$15.00
Rival.....$9.00
Taplin Mfg. Co.: ₱ gro.
No. 60 Improved Dover.....$6.50
No. 75 Improved Dover.....$7.50
No. 75-2 Imp'd Dover, Tin'd.....$9.00
No. 100 Improved Dover.....$8.00
No. 102 Improved Dover Tin'd...$9.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, Tin'd. 7.00
Lyon's, Standard size.....₱ doz. $1.75
Wonder (S. S. & Co.).....₱ gro. $7.50

Bellows—

Blacksmith, Standard List.70@70&10%
C. E. Jennings & Co., Blacksmith..60&10%
C. E. Jennings & Co., Hand.....33⅓%

Blacksmiths—

Inch..	30	32	34	36	38	40
Each	$3.50	3.75	4.25	4.80	5.35	6.15

Extra Length:
Each..$4.00 4.55 5.10 5.60 6.40 7.50

Net Prices.

Molders—

Inch..	9	10	11	12	14	16
Doz...	$6.75	7.25	9.50	9.50	12.00	14.50

Hand—

Inch...	6	7	8	9	10	12
Doz....	$3.75	4.25	4.50	5.00	5.7	6.75

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70@70&10%
Jersey.....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Barton Gong.....55%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's.....40@40&10%
Yankee Gong.....55%

Hand—

Hand Bells, Polished....60&5@60&10%
White Metal.....55@55&10%
Nickel Plated.....50@50&10%
Swiss.....60@60&7½%
Silver Chime.....33½@33⅓&10%

Miscellaneous—

Farm Bells.....lb 2@2¼c
Steel Alloy Church and School.....60%
National Bell Foundry Co.:
Superior Cast Steel Church and School Bells.....50&10&5@60%
Wilmot & Hobbs Mfg. Co., Gongs.....70%

Belting—Rubber—

Agricultural (Low Grade).75&10@80%
Common Standard.....75@75&10%
Standard.....70@70&10%
Extra.....60&10&5%
High Grade.....50&10@50&10&5%
Boston Belting Co.:
Seamless Stitched, Imperial.....45&5%
Boston.....50&5%
Niagara.....60&5%

Leather—

Extra Heavy, Short Lap...50&10@60%
Regular Short Lap.....60@60&5%
Standard.....60&10@65&10%
Light Standard.....65@70%
Leather Lacing.....60&10%

Cotton—

Rossendale-Reddaway B. & H. Co.:
Sphinx Brand.....60&10%
Durable Brand.....70%

Bench Stops—See *Stops, Bench.*

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters, No. 1, $3.75; No. 2, $6.50; No. 3, $9.50; No. 4, $14.75.

Bicycle Goods—

John S. Leng's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden.....70&10@75%
Cleveland's steel.....60&10@70%
Ford's Star Brand Self Lubricating..
60&10%
Hollow Steel, Ford's Pat. Star Brand...
50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards Stove—

Zinc, Crystal, &c.....40@40&10%

Bolts—

Carriage, Machine &c.—

Common, list Feb. 1, '02.....60&5@...%
Norway Iron. $3.00, list Jan. 1, '98
80@80&5%
Phila. Eagle, $3.00 list May 24, '99....
80@80&5%
Bolt Ends, list Feb. 14, '95...70&5@...%
Machine, list Oct. 1, '99.....65&5@...%
Machine with C & T. Nuts.....
65&7½@...%

NOTE.—*Jobbers are in many cases underselling the manufacturers.*

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	3	4	5	6	8
Per doz...	$0.36	.39	.47	.55	

Cast Iron Spring Foot:

Inch.....	6	8	10
Per doz...	$1.00	1.25	1.75

Cast Iron Chain, Flat, Japanned:

Inch.....	6	8	10
Per doz...	$0.75	1.05	1.30

Cast Iron Shutter, Brass Knobs:

Inch.....	6	8	10
Per doz...	$0.67	.80	1.00

Wrought Barrel Brass Knob:

Inch.....	3	4	5	6	8
Per doz...	$0.44	.50	.61	.70	1.28

Wrought Barrel.....75&5@75&10&5%
Wrought " Bronzed..40&5@50&10%
Wrought Flush Bolt, K. 50&10@60&10%
Wrought Shutter...40&10&5@60&5%
Wrought Square Neck.....50@50&10%
Wrought Sunk.....50@50&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow.....60&5@...%
Stove.....77½%

Tire—

Common.....77½%
Norway Iron.....80@80&5%
American Screw Company:
Norway Phila., list Oct. 16, '94....82½%
Eagle Phila., list Oct. 16, '94.....85%
Bay State, list Dec. 28, '99.....77½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84..82½%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Dec. 28, '99.....77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99.....77½%
Keystone Phila., list Oct. '84.....85%
Norway Phila., list Oct. '84.....82½%
Upson Nut Co.:
Tire Bolts.....77½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz..	$4.30	5.00	5.75	7.25
Inch.....	2¼	2½		
Per Doz..	$8.65	11.50		

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boring Machines—*See Machines, Boring.*

Boxes, Mitre—

C. E. Jennings & Co.....40%
Seavey's, per doz., $30.....40%

Braces—

NOTE.—*Most Braces are sold at net prices.*

Common Ball, American...$1.15@1.35
Barber's.....50&10&10@60&10%
Fray's Genuine Spofford a.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....60%
C. E. Jennings & Co.....50&10%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Patent..50%
P., S. & W. Co Peck's Patent.....
60&10@65&5%

Brackets—

Wrought Steel.....75&5@75&10%
Bradley's Wire Shelf:
Full cases.....80%
Broken cases.....75&10%
Griffin's Pressed Steel.....75%
Griffin's Folding Brackets.....70&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....75%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Boss.....₱ gro. $48.00
Hoosier.....₱ gro. $36.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '96.....30@30&5%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....50@50&10%
Fast Joint, Narrow.....50@50&10%
Loose Joint.....50&5@70&10%
Loose Pin.....70&5@70&10%
Mayer's Hinges.....70&5@70&10%
Parliament Butts.....70&5@70&10%

Wrought Steel—

Table and Back Flaps.....60%
Narrow and Broad.....60%
Inside Blind.....60&10%
Loose Pin.....60&10%
Loose Pin, Ball and Steeple Tip.....75%
Japanned, Ball Tip Butts...60%
Bronzed Wrt. Nar. and Inside Blind Butts.....45&20@45&25%

Extra 25@25&10%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1300 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blanks 1 prong.....per lb...34@4c
Sharp, 1 prong.....per lb...4@4½c
Perkins' Blunt Toe.....₱ D 3½¢
Perkins' Sharp Toe.....₱ D 4 ¢

Can Openers—See *Openers, Can*

Cans, Milk—

	5	8	10 gal.	
Illinois Pattern.	$1 75	2.10	2.25	each.
Iowa Pattern...	....	2.40	2.60	each.
Buffalo Pattern.	....	2.80	3.50	each.
	20	30	40	qts.
New York Patt'rn	3.00	3.25	3.40	each.
Baltimore Patt'rn	2.50	2.85	3.10	each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	108 gro

Caps—Percussion—

Eley's E. B.....60c
G. D.....per M 32@34c
F. L.....per M 42@...c
G. E.....per M 47@50c
Musket.....per M 62@...c

Primers—

Berdan Primers, $1.00 per M.....5%
B. L. Caps (Sturtevant Shells) $1.00 per M.....5%
All other primers per M $1.22@$1.27

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—
Blank Cartridges:
32 C. F., $5.50 ..... 10@5%
38 C. F., $7.00 ..... 10@5%
22 cal. Rim, $1.50 ..... 10@5%
32 cal. Rim $2.25 ..... 10&5%
B. B. Caps, Con. Ball Swgt $1.90
B. B. Caps, Round Ball $1.40
Central Fire 25%
Target and Sporting Rifle ..... 15@5%
Primed Shells and Bullets ..... 15@10%
Rim Fire Sporting 50%
Rim Fire, Military ..... 15@5%

Casters—
Bed ..... 70&10@70&10&5%
Plate ..... 75&10@75&10&5%
Philadelphia ..... 75&10@75&10&5%
Boss ..... 70&10%
Boss Anti-Friction ..... 70&10%
Martin's Patent (Phœnix) 45%
Payson's Anti-Friction ..... 70&10&10%
Standard Ball Bearing 45%
Tucker's Patent low list 30%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—
American Coil, Jobbers' Shipments:

3/16	1/4	5-16	3/8	7-16	1/2	9-16
8.70	6.35	5.30	4.50	4.30	4.20	4.25
5/8	3/4	7/8	1 to 1¼ inch.			
4.10	4.15	4.15	4.15	per 100 lb.		

Less than Cask lots add 25c.
German Coil ..... 60&10@10%

Halters and Ties—
Halter Chains ..... 60@10@60@10@10%
German Halter Chain, list July 25, '97 ..... 60&10@60&10@10@5%
Cow Ties ..... 60@60@5%

Trace, Wagon, &c.—
Traces, Western Standard: 100 pair
6½—6-3, Straight, with ring $30.00
6½—6-2, Straight, with ring $31.00
6½—8-2, Straight, with ring $35.00
6½—10-2, Straight, with ring $38.00
Add 25c per pair for Hooks.
Twist Traces 25c per pair higher than Straight Link.
Trace, Wagon and Fancy Chains ..... 50&10@50@10@5%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron ..... 60@10@60@10@10%
Brass ..... 60@10@60@10@10%
Safety Chain ..... 70&5@70@10%
Gal. Pump Chain ..... lb. 4½@4½c
Covert Mfg. Co.:
Breast ..... 35&2%
Halter ..... 35&2%
Heel ..... 35&2%
Rein ..... 35&2%
Stallion ..... 35&2%
Covert Sad. Works:
Breast 70%
Halter 70%
Cold Back 70%
Rein 70%
Oneida Community:
Am. Coll and Halters ..... 40@45&5%
Am Cow Ties ..... 45@50%
Eureka Coll and Halter ..... 45@50&5%
Niagara Coll and Halter ..... 45@50&5%
Niagara Cow Ties ..... 45&5@50&10&5%
Wire Dog Chains ..... 45@50&5%
Wire Goods Co:
Dog Chain ..... 60&10%
Universal Dbl-Jointed Chain 50%

Chalk—(From Jobbers.)
Carpenters' Blue ..... gro. 42@45c
Carpenters', Red ..... gro. 37@40c
Carpenters', White ..... gro. 33@35c
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—
Bardsley's ..... 40&10%
Columbia ..... 50&10%
Eclipse ..... 60@60&10%

Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools 55%
Youths' Chests, with Tools 40%
Gentlemens' Chests, with Tools 30%
Farmers', Carpenters', etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty 50%
C. E. Jennings & Co.'s Machinists' Tool Chests 30%

Chisels—
Socket Framing and Firmer
Standard List ..... 70@7 &10%
Buck Bros 30%
Charles Buck 30%
C. E. Jennings & Co. Socket Firmer No. 10 ..... 60&10%
C. E. Jennings & Co. Socket Framing No. 15 ..... 60&10%
Swan's ..... 70&5%
L. & I. J. White ..... 30@30&5%

Tanged—
Tanged Firmers ..... 40@5@40&10%
Buck Bros 30%
Charles Buck 30%
C. E. Jennings & Co. Nos. 10 181 ..... 25%
L. & I. J. White, Tanged ..... 35&5%

Cold—
Cold Chisels, good quality lb. 12@15c
Cold Chisels, fair quality ..... lb. 11@12c
Cold Chisels, ordinary ..... lb. 8@9c

Chucks—
Beach Pat., each $8.00 ..... 30%
Massey's Planer and Milling ..... 15@20%
Pratt's Positive Drive 25%
Empire 25%
Blacksmiths' 25%
Skinner Patent Chucks:
Combination Lathe Chucks 40%
Drill Chucks, Patent and Standard 30%
Drill Chucks, New Model 25%
Independent Lathe Chucks 40%
Improved Planer Chucks 25%
Universal Lathe Chucks 40%
Face Plate Jaws 40%
Standard Tool Co.:
Improved Drill Chuck 45%
Union Mfg. Co.:
Combination 40%
Cear Drill 30%
Geared Scroll 30%
Independent 40%
Union Drill 30%
Universal 40%
Face Plate Jaws 35%

Clamps—
Adjustable, Hammers' ..... 20@20&5%
Cabinet, Sargent's ..... 50&10%
Carriage Makers' ..... & W. Co. 40&10%
Carriage Makers' Sargent's ..... 50&10%
Bes. Parallel ..... 3½&10%
Lehmann & Voigt Forge & Tool Co 40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners Sidewalk—
Star Socket, All Steel ..... ₱ doz. $4.00 net
Star Shank, All Steel ..... ₱ doz. $3.75 net
W. & C. Shank, All Steel, 7½ in. ₱ doz., $3.05; 8 in., $3.10; 8½ in., $3.25.

Cleavers, Butchers'—
Foster Bros. 30%
New Haven Edge Tool Co.'s 40%
Fayette R. Plumb ..... 33⅓&33⅓&10%
P. S. & W ..... 50@50&5%
L. & I. J. White 35%

Clippers—
Chicago Flexible Shaft Company
Handy Toilet ..... ₱ doz. $7.90
Mascotte Toilet ..... ₱ doz. $3.50
Monitor Toilet ..... ₱ doz. $9.00
Stewart's Patent ..... ₱ doz. $10.00

Clips Axle—
Eagle and Superior ¼ and 5-16 inch ..... 70@10%
Norway, ¼ and 5-16 inch ..... 70@70@10%

Cloth and Netting, Wire—
See Wire, &c.

Cocks, Brass—
Hardware list:
Compression and Plain Bibbs, &c. ..... 65@5@65&10%
Globe, Kerosene, Racking, &c., Cocks ..... 65@10@70%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Stevens' list 40%
Embossed, Gilt, Pope & Stevens' list 30&10%
Leather Pope & Stevens' list 40%

Compasses Dividers, &c.
Ordinary Goods ..... 75@75@5%
Bemis & Call Hdw. & To. Co.:
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 65%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Compasses 50%
J. Stevens A. & T. Co ..... 25&10%

Compressors Corn Shock—
J. B. Hughes' ₱ doz. $2.50

Conductor Pipe, Galva.—
L. C. L. to Dealers:

Territory.	Not nested.	Nested.
Eastern	70@2½@1 %	70@5@10%
Central	65@10@1 %	70@10%
Southern	65@10%	65@2½@10%
S. Western	60@12½@10%	60@15@10%

Terms 2% for cash.
Jobbers receive extra 12½@2½ on carloads loose, and extra 12½ on carloads crated.
See also *Eave Troughs.*

Coolers, Water—

Gal. each	2	3	4	6	8
Labrador	$1.20	$1.50	$1.80	$2.10	2.20
Gal.	3	4	6	8	
Iceland, ea.	$1.80	$2.10	$2.40	$3.00	
Gal.	2	3	4	6	8
Galv. Lined Ea.	$1.85	$2.00	$2.25	$2.90	$3.90

25%

Ga.v. Lined side handles

Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.50	$4.15...25%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—Sash—
Braided, Drab ..... lb. 25c
Braided, White, Com ..... lb. 17½@18c
Cable Laid Italian ..... lb. A, 18c; B, 16c
Common India ..... lb 9 @9½c
Cotton Sash Cord, Twisted ..... 12@16c
Patent Russia ..... lb. 12½@13c
Cable Laid Russia ..... lb. 13½@14c
India Hemp, Braided ..... lb. 14@15c
India Hemp, Twisted ..... lb. 10@12c
Patent India, Twisted ..... lb. 10@12c
Pearl Braided, cotton ..... ₱ b 18¢
Massachusetts, White ..... ₱ b 22½¢
Massachusetts, Drab ..... ₱ b 26½¢
Eddystone Braided Cotton ..... ₱ b 19¢
Harmony Cable Laid Italian ..... ₱ b 18¢
Ossawan Mills:
Crown, Solid Braided White ..... ₱ b 22¢
Braided, Giant, White ..... ₱ b 20¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 14¢
Cable Laid India ..... 13¢
Braided India ..... 18¢
Phœnix, White ..... 19¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton ..... ₱ b 32½¢
Braided, Italian Hemp ..... ₱ b 32½¢
Braided, Linen ..... ₱ b 49¢
Braided, White Cotton, Spot ..... ₱ b 28½¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab, 40¢ 15%
A quality, White, 35¢ 15%
B quality, Drab, 35¢ 15%
B quality, White, 30¢ 15%
Italian Hemp, 40¢ 15%
Linen, 57½¢ 15%

Wire, Picture—
List Oct. 1, 00, 85@10@10@85@10@10&5%
Note.—There is a good deal of confusion in lists, some using old list and others the above list.

Corn Knives and Cutters—See *Knives, Corn.*

Corn Planters—See *Planters, Corn.*

Crackers, Nut—
Little Giant ..... ₱ gr. $24.00

Cradles—
Grain 50%

Crayons—
White Round Crayons, gross 5½@6c
Cases, 100 gro., $4.50, at factory.
D. M. Steward Mfg. Co.
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square ..... gr. $1.50
Rolling Mill Crayons ..... gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots 20%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks Shepherds'—
Fort Madison, Heavy ..... ₱ doz. $7.00
Fort Madison, Light ..... ₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden ..... ₱ doz. $10.00

Cutlery, Table—
International Silver Company:
No. 12 Medium Knives, 1847, ₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ₱ doz $3.00
Wm. Rogers & Son ..... ₱ doz. $2.50
Simeon L. & Geo. H. Rogers Company:
12 dwt Medium Knives ..... ₱ doz. $3.00
No. 77 Medium Knives ..... ₱ doz. $2.50

Cutters—Glass—
H. H. Mayhew Co 40%
Smith & Hemenway Co 50%

Meat—
Hale's. Nos. 11 & 111 12 & 112 13 & 113
Per doz .. $9.50 12.50 16.00
American 30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Connecticut 50%

No.	20	40	60	8	10	12
each	$1.75	2.00	2.25	3.00	3.00	4.00

Enterprise ..... 35@25&7½%

Nos.	10	12	22	32
Each	$2	$3	$2.50	$4 $6

Dixon's ₱ doz. ..... 30&10@40%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Home No. 1, ₱ doz. $22.75 ..... 50&10%
Little Giant, ₱ doz. ..... 33⅓&5@40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$75.00	$68.00

Sterling ..... 33⅓&5%

Nos	1	2
Each	$2.00	$2.50

New Triumph No. 605, ₱ doz. 324.00 ..... 30&10@40%
Woodruff's, ₱ doz ..... 30&10@40%

Nos.	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ₱ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c 40%
Kraut Cutter 24 x 7, 26 x 8, 30 x 9 ..... 55%
Kraut Cutters 36 x 12, 40 x 12 ..... 40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40%
Slaw Cutters, 1 Knife, ₱ gr. ..... $18@$20
Slaw Cutters, 2 Knife, ₱ gr. ..... $22@$36

Tobacco—
All Iron, Cheap ..... doz. $4.25@$4.50
Enterprise ..... 25@50%
National, ₱ doz. $21.00 ..... 40%
Sargent's, ₱ doz., No. 2 ..... 45&10%
Sargent's No. 12 and 21 ..... 50&10%

Washer—
Appleton's, ₱ doz. $16.00 ..... 50&10&10%
Bonney's 40%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger ..... per doz., $9.00
Iwan's Improved Post Hole Auger 40%
Iwan's Perfection Post Hole Digger ..... ₱ doz. $9.00
Kohler's Universal ..... ₱ doz. $14.00
Kohler's Little Giant ..... ₱ doz. $14.00
Kohler's Hercules ..... ₱ doz. $12.00
Kohler's Invincible ..... ₱ doz. $10.00
Kohler's Rival ..... ₱ doz. $9.00
Kohler's Pioneer ..... ₱ doz. $9.00
Never-Break Post Hole Diggers, ₱ doz. $24.00 ..... 60%
Samson, ₱ doz. $34.00 ..... 35%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Doors, Screen—
Porter's Plain, No. 6 ..... ₱ doz. $6.50
Porter's Ornamental, No. 70, ₱ doz. $10.00

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₱ doz. $18; No. 2, $15; No. 3, $14; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Common Blacksmiths' Drill ..... each $1.50@$1.75
Blacksmiths' Self-feeding ..... each $3.75@4.00
Breast, Millers Falls, each $3.00 ..... 15&10%
Breast, P. S. & W ..... 40@40&5%
Goodell Automatic Drills ..... 40&5@40&10%
Jones's Automatic Drills Nos. 2 and 3 ..... 16⅔%
Johnson's Drill Points ..... 25&10%
Ratchet, Curtis & Curtis 30%
Ratchet, Parker's 40%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's, P. S. & W 50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 ..... 33⅓%

Twist Drills—
Standard List ..... 60@10@60@10@10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Screw Driver Bits ..... per doz. 45@70c
Balsey's Screw Holder and Driver, ₱ doz. 2½-inch, $3; 4-in., $7.50 6-in., $9 ..... 40%
Buck Bros. 30%
Buck Bros' Screw Driver Bits 30%
Champion ..... 40&10%
Douglass Mfg. Co. ..... 20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 ..... 50%
Gay's Double Action Ratchet 35%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 40&10%
New England Specialty Co ..... 50&10%
Sargent & Co.'s:
Nos. 1, 50, 55 and 60 ..... 50&10&10%
Nos. 20 and 40 ..... 66⅔&10%
Smith & Hemenway Co ..... 40&5%
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 70&10&10&10%
No. 86 ..... 70@70&10&10%
Swan's:
Nos. 65 to 68 ..... 50%
No. 40 ..... 40&10%
Nos. 25, 35 and 45 ..... 20@10&10%

Eave Trough Galvanized
Territory. L. C. L.

Eastern	75&2@10@10%	Carloads extra 12½@25c
Central	75&2@7½&2@1 %	
Southern	70&2@7½&2@10%	
S. Western	70&2@10&10%	

Terms, 2% for cash.
See also *Conductor Pipe and Elbows.*

Egg Beaters—See *Beaters, Egg*

Egg Openers—
See *Openers, Egg.*

Elbows and Shoes—
Factory shipments 60%
Perfect Elbows (S. S. & Co.) 40%

Emery, Turkish—

	4 to 6 lb.	5 to 150 Flour
Kegs ..... lb.	5c	5½c 5¾c
½ Kegs ..... lb.	5½c	5¾c 5¾c
Kegs ..... lb	6c	6c
10-lb cans, 10 in case	6½c	7c 6c
10-lb. cans, less than 10	10c	10c 8c

NOTE.—*In lots 1 to 3 tons a discount of 10% is given.*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's ..... 50&10%

Faucets—
Cork Lined ..... 70@5@70@10@5%
Metallic Key, Leather Lined ..... 70@70@10%
Red Cedar ..... 50@50@10%
B. & L. & B. Co.:
Lockport, Metal Plug, reduced list 60@5%
Star ..... 60@60@5%
Star, Metal Plug new list ..... 40@40@5%
West's Lock, Open and Shut Key 50&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's Victor Metal Key 50&10%
John Sommer's Duplex Metal Key 60%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined 50%
John Sommer's Reliable Cork Lined ..... 50&10%
John Sommer's Chicago Cork Lined 60%
John Sommer's O. K. Cork Lined 50%
John Sommer's No Brand, Cellar 50%
John Sommer's Perfection Cedar 40%
McKenna, Brass:
Burglar Proof, N. P 35%
Improved, ¾ and ⅞ inch 35%
Self Measuring:
Enterprise, ₱ doz. $36.00 ..... 40&10%
Lane's, ₱ doz. $36.00 ..... 40&10%
National Measuring, ₱ doz. $36.00 ..... 40%

Felloe Plates—
See *Plates, Felloe.*

Files—Domestic—
List revised Nov. 1 1899.
Best Brands ..... 70@5@70@10%
Standard Brands ..... 75@75@10@5%
Second Quality ..... 75@10@10@30@5%

Imported—
Stubs' Tapers, Stubs' list, July 25, '97 ..... 35%

Fixtures, Grindstone—
Net Prices:

Inch	15	17	19	21	24
Per doz.	$2.60	2.75	3.00	3.50	4.40

P., S. & W. Co ..... 50@50&5%
Reading Hardware Co 60%
Sargent's ..... 60&10&10%
Stowell's Giant Grindstone Hanger, ₱ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy ..... 50&10&10%
Stowell's Grindstone Fixtures Light ..... 60&10%

Fodder Squeezers—
See *Compressors.*

Forks—
Sept. 1, 1900, list.
Grain or Barley Forks, 16 to 20 inches ..... 70@5% (Carloads extra 25c)
Hay, 2 tine 65%
Hay, 3 tine 66⅔%
Hay, 4 tine, Header and Barley Forks, 13 to 16 inches 66⅔%
Manure, 4 tine 70%
Manure, 5 and 6 tine 70%
Spading ..... 70@5%
Iowa Dig-Easy Potato 65%
Victor, Hay 66⅔%
Victor, Manure 70%
Victor, Header ..... 60&30%
Champion, Hay 66⅔%
Champion, Manure 70%
Columbia, Hay ..... 66⅔&5%
Columbia, Manure 70%
Columbia, Spading 70%
Hawkeye Wood Barley 4 tine ₱ doz. $5.00; 6 tine, $6.00.
W. & C. Potato Digger 65%
Acme Hay ..... 60&10&7½%
Acme Manure, 4 tine ..... 60&30&10%
Acme Manure, 6 tine ..... 66⅔&10&2%
Dakota Header ..... 65&15&5%
Jackson Steel Barley ..... 65&15&5%
Kansas Header ..... 60&5%
W. & C. Favorite Wood Parley 4 tine, ₱ doz., $5.00; 6 tine, $6.00
Plated.—See *Spoons.*

Frames—Saw—
Red, Polished and Varnished ..... doz. $1.15@$1.50
White ..... doz. 75@80c

Screens and Frames—
See *Screens.*

Freezers, Ice Cream—

Qts.	2	3	4	6	8	10
Best	$1.45	1.65	1.95	2.40	3.20	4.20
Good	$1.25	1.40	1.70	2.15	2.75	3.75
Fair	$1.00	1.10	1.30	1.75	2.25	2.90

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—
Per 1000 Feet.

Hemp Fuse	$2.60
Cotton Fuse	2.90
Single Taped Fuse	3.25
Double Taped Fuse	4.30
Triple Taped Fuse	5.00

(Packed 1,000 feet)

Gates, Molasses and Oil—

Stebbins' ..... 80@80&10%

Gauges—

Marking, Mortise, &c. .....
55&10@55&10@10%

Barrett's Comb. Roller Gauge .....
₱ doz. $6.75@7.25

Stanley R. & L. Co.'s Butt & Babbet Gauge ..... 20@20&10@10%

Wire, Brown & Sharpe's 25%

Wire, Morse's 25%

Wire P., S. & W. Co ..... 30@30&10%

Gimlets— Single Cut—

Nail, Metal, Assorted gro. $1.40@1.60

Spike, Metal, Assorted gro. $2.80@3.25

Nail, Wood Handled, Assorted, gro. $1.75@2.00

Spike, Wood Handled, Assorted gro. $2 25@3.50

Glass, American Window

Jobbers' List, Jan. 21, 1901

From store ..... 90&10%

F. O.B. factory, carload lots:

Single strength ..... 90&10@7½

Double strength ..... 90&10@10%

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush. 37½@50%

List B, Cans (½ pts., pts., qts.) ..... 33⅓@58%

List C, Cans (½ gal., gal.) ..... 25@45%

International Glue Co. (Martin's) ..... 4@10@5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Common Grade ..... *gro. $5.00@6.00*

Dixon's Everlasting ..... 10-lb pails, ea. 35¢

Dixon's Everlasting, in bxs. ₱ doz. 1 lb $1.30; 2 lb $2.00

Snow Flake:
1 qt. cans, per doz. $2.00; 2 qt., $3.20; 1 gal. cans per doz. $6.00; 3 gal. $16.00; 5 gal. $24.00 } 10%

Grindstones—

Bicycle Emery Grinder $6.50

Bicycle Grindstones, each ..... $2.50@3.00

Pike Mfg. Co:
Improved Family Grindstones, per inch, per doz. $2.00
Pike Mowe Knife and Tool Grinder, each ..... $6.00 } 33⅓%

Velox Ball Bearing, mounted, Angle Iron Frames ..... each, $3.25

Guards, Snow—

Cleveland Wire Spring Co.:
Galv. Steel ₱ 1000 ..... $9.00
Copper ₱ 1000 ..... $18.00

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl— *gro.*

Peg Patent, Leather Top ..... *$4.90@5.25*

Peg Patent, Plain Top ..... *$3.50@3.75*

Sewing, Brass Ferrule ..... *$1.50@1.60*

Saddlers', Brass Ferrule ..... *$1.35@1.45*

Peg, Common ..... *$1.25@1.35*

Brad, Common ..... *$1.50@1.75*

Halters and Ties—

Covert Mfg. Co.:
Web ..... 45&2%
Jute Rope ..... 45&2%
Sisal Rope ..... 30&2%

Covert's Saddlery Works:
Web and Leather Halters 70%
Jute and Manila Rope Halters 70%
Sisal Rope Halters ..... 60&20%
Jute, Manila and Cotton Rope Ties .. 70%
Sisal Rope Ties ..... 60&20%

Hammers—

Handled Hammers—

Heller's Machinists' ..... 50@50&5%

Heller's Farriers ..... 50@50&5%

Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40@40& 0&10%

Peck, Stow & Wilcox ..... 50&10%

Fayette R. Plumb:
Plumb, A. E. Nail ..... 33⅓&5@33⅓&10&5%
Engineers' and B. S. Hand ..... 50&10&7½@50&10&10&7½%
Machinists' Hammers ..... 50&10@50&10&10%
Riveting and Tinners' ..... 40&7½@40&10&7½%

Sargent's C. S. New List 45%

Heavy Hammers and Sledges—

3 lb. and under ..... *lb. 45c* } *75&10@5*
3 to 5 lb ..... *lb. 36c* } @..%
Over 5 lb ..... *lb. 30c*

Wilkinson's Smiths' ..... *9½c@10c lb.*

Handcuffs and Leg Irons
See *Police Goods.*

Handles—

Agricultural Tool Handles—

Axe, Pick, &c. ..... *50@5&10@5%*

Hoe Rake, Fork, &c. ..... *60@60@5%*

Shovel, &c., Wood D Handle *50&10@50%*

Cross-Cut Saw Handles—

Atkins' ..... 40&5%

Champion ..... 45@45&10%

Disston's 50%

Mechanics' Tool Handles—

Auger, assorted ..... *gro. $2.30@$3.50*

Brad Awl ..... *gro. $1.25@$1.50*

Chisel Handles:
Apple Tanged Firmer, gro. ass'd, $2.25@$2 35; large, $2.50@$2.60.
Hickory Tanged Firmer, gro. ass'd. $1.75@$2.20; large, $3 50@$3.70.
Apple Socket Firmer, gro. ass'd, $1.70@$1.85; large, $2 00@$2.25
Hickory Socket Firmer, gro ass'd, $1.60 @ $1.75; large, $1.75 @ $2.00
Hickory Socket Framing, gro. ass'd. $2.50@$2.75; large, $2.65@$2.85

File, assorted ..... *gro. $1.60@$1.15*

Hammer, Hatchet, Axe, &c. *60%*

Hand Saw, Varnished, doz. 70@75c
Not Varnished ..... *55@60c*

Plane Handles:
Jack, doz. 25c; Jack Bolted ..... *55@60c*
Fore, doz. 35@38c; Fore, Bolted ..... *70@75c*

Nicholson Simplicity File Handle, ₱ gro. ..... $0.85@$1.50

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch	*3*	*4*	*5*	*6*	*8*
Doz	*$0.85*	*1.20*	*1.50*	*1.90*	*3.30*

Barn Door, New England Pattern, Check Back, Regular:

Inch	*3*	*4*	*5*	*6*
Doz	*$1.30*	*1.75*	*2.50*	*3.06*

Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin 25%

Chisholm & Moore Mfg. Co.:
Baggage Car Door 50%
Elevator 40%
Railroad 55%

Columbian Hdw. Co.:
American Trackless ..... 33⅓&10%

Cronk Hanger Co.:
Loose Axle 60%
Roller Bearing ..... 60&10%

Lane Bros. Co.:
Parlor, Ball Bearing $4.15
Parlor, Standard $3.35
Parlor, New Model $3.85
Parlor New Champion $2.30
Barn Door, Standard 50&10&10&5%
Covered ..... 50&10&10%
Special ..... 50&10&10&5%

Lawrence Bros.:
Advance 60%
Cleveland 70%
Crown 60%
New York 60%
Peerless ..... 60&10%
Sterling 60%

McKinney Mfg. Co.:
No. 1, Special, $15 ..... 60&10%
No. 2, Standard, $18 ..... 60&10%

Myers' Stayon Hangers and Track, 50&10% (net)

Stowell Mfg. and Foundry Co.
Acme Parlor Ball Bearing 40%
Atlas 60%
Badger Barn Door 50%
Baggage Car Door 50%
Climax Anti-Friction 50%
Elevator 40%
Express 50%
Interstate 60%
Lundy Parlor Door 50%
Magic 50%
Matchless 60%
Nansen ..... 60&10%
Railroad 50%
Street Car Door 50%
Steel, Nos. 300, 404, 500 ..... 40&15%
Stowell Parlor Door 50%
Wild West, Nos. 300, 404, 500 ..... 5%
Zenith for Wood Track 50%

Taylor & Boggs Foundry Co.:
Kidder's ..... 50&15&10&5%

Wilcox Mfg. Co.:
Bike Roller Bearing ..... 60&10%
C. J. Roller Bearing ..... 60&10%
Cycle Ball Bearing 50%
Dwarf Ball Bearing 40%
Ives, Wood Track ..... 60&10%
L. T. Roller Bearing ..... 60&10&5%
New Era Roller Bearing ..... 50&10%
O. K. Roller Bearing ..... 60&10&5%
Prindle, Wood Track 60%
Richards' Wood Track 60%
Richards' Steel Track ..... 50&10%
Spencer Roller Bearing ..... 60&10%
Tandem Nos. 1 and 2 ..... 60%
Underwriters' Roller Bearing 40%
Velvet 50%
Wilcox Auditorium Ball Bearing 20%
Wilcox Barn Trolley No. 123 ..... 40%
Wilcox Elevator Door Hangers, Nos 112 and 122½ 5%
Wilcox Elevator Door Hangers, No. 132 ..... 40%
Wilcox Fire Trolley, Roller Bearing 30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century ..... 50&10&10%
Wilcox O. K. Steel Track 50%
Wilcox O. K. Trolley 50%
Wilcox Trolley Ball Bearing 40%
Wilcox Wideman Narrow Gauge, Ball Bearing 40%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp ₱ doz. 50%

Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Best Brands ..... *50@50&10%*

Cheaper Brands ..... *60@60&10%*

Note.—Net prices often made.

Hay and Straw Knives—
See *Knives.*

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.45*	*2.90*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1¼*	*2*	*2½*
Doz. pair	*$0.60*	*.55*	*.52*	*.45*

Mortise Reversible Shutter, (Buffalo, &c.)

No.	*1*	*1½*	*2*
Doz. pair	*$0.65*	*.60*	*.55*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%

Parker ..... 70@75%

Reading's Gravity ..... 75&10%

Sargent's, Nos. 1, 3, 5, 11 & 14 ..... 70&10@70&20%

Stanley's Steel Gravity Blind Hinges, ₱ doz. sets, without screws, $0.80; with screws, $1.15.

Wrightsville H'dware Co.:
O. S. Lull & Porter ..... 80&2½%
Acme, Lull & Porter ..... 75&10%
Queen City Reversible ..... 75&10%
Stenger's Positive Locking, Nos. 1 & 2 ..... 70&10&5%

Shepard's Noiseless, Nos. 60, 65, 55 ..... 70&10%

Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%

1868, Old Pat'n, Nos. 1, 3 & 5 ..... 75&7½%

Tip Pat'n, Nos. 1, 3 & 5 ..... 75&7½%

Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75&7½%

Shepard's Double Locking, Nos. 20 & 25 ..... 70&10%

Champion Gravity Locking, No. 75 ..... 75&7½%

Steamboat Gravity Locking, No. 15 ..... 75&7½%

Pioneer, Nos. 060, 45 & 5½ ..... 75&7½%

Empire, Nos. 101 & 103 ..... 70&7½%

Wood Co's Mortise Gravity Locking, No. 2 ..... 60&10%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with Latches	*$1.80*	*1.90*	*2.65*
Hinges only	*$1.20*	*1.50*	*2.00*
Latches only	*.60*	*.60*	*.65*

New England:
With Latch ..... *doz* ..... *@$1.55*
Without Latch ..... *doz.* ..... *@$1.25*

Reversible Self-Closing:
With Latch ..... *doz.* ..... *@$1.80*
Without Latch ..... *doz.* ..... *@$1.45*

Western:
With Latch ..... *doz.* *$1.60@1.75*
Without Latch ..... *doz.* *$0.95@1.20*

Wrightsville H'dware Co.:
Shepard's or Clark's, doz. sets,

No.	1	2	3
Hinges with Latches	$1.80	2.00	2.75
Hinges only	1.20	1.50	2.10
Latches only	.65	.65	.70

Spring Hinges—

Holdback, Cast Iron, gro. *$8.00@8.50*

Non-Holdback, Cast Iron gro *$7@7.50*

J. Bardsley
Bardsley's Patent Checking 15%

Bommer Bros.:
Bommer Ball Bring Floor Hinges 40%
Bommer Spring Hinges 40%

Chicago Spring Butt Co.:
Chicago 25%
Floor Hinge 50%
Garden City Engine House 25%
Keene's Saloon Door 25%
Triple End 50%

Columbian Hdw. Co.:
Acme, Wrt. Steel 30%
Acme, Brass 20%
American 30%
Columbia, No. 14 ..... ₱ gr. $9.00
Columbia, No. 18 ..... ₱ gr. $25.00
Columbia, Adjustable 30%
Gem, new list 25%
Clover Leaf ..... ₱ gr. $12.50
Oxford, new list 25%

Hoffman Hinge & Foundry Co.:
No. 70 & 80 Holdback Detachable $8.50

Lawson Mfg. Co.:
Machine 35%
Matchless Pivot 45%

Payson Mfg. Co.:
Oblique ..... 50&10%

Shelby Spring Hinge Co.:
Crown Jamb Hinge 40%
Chief Ball Bearing Floor Hinge 45%
Royal Ball Bearing Floor Hinge 45%

Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr $12.50
Ideal, No. 4 ..... ₱ gr. $9.00
New Idea No. 1 ..... ₱ gr. $9.00
New Idea, Double Acting 45%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1901:
Light Strap Hinges 70%
Heavy Strap Hinges ..... 75&10%
Light T Hinges 66⅔%
Heavy T Hinges ..... 60&5%
Extra Heavy T Hinges 75%
Hinge Hasps 55%
Cor. Heavy Strap ..... *75&10%*
Cor. Ex. Heavy T *75%*
Extra 5@25&5%

Screw Hook and Strap:
6 to 12 in ..... *lb. 3½c*
14 to 20 in ..... *lb. 3 c*
22 to 36 in ..... *lb. 3½c*

Screw Hook and Eye:
¾ to 1 inch ..... *lb 5 c*
¾ inch ..... *lb 6 c*
½ inch ..... *lb. 7 c*

Miscellaneous—

Hoffman's Steel Spring Butt Hinges ..... 40&10%

Hoffman's Offset Refrigerator Hinges ..... 40&10%

Hods, Coal—

	15	*16*	*17*	*18 inch.*
Galv. Open	*$2.70*	*3.00*	*3.30*	*5 60 ₱ doz.*
Jap. Open	*$2.10*	*2.40*	*2.70*	*3.00 ₱ doz.*
Galv. Funnel	*$3.30*	*3.60*	*3.90*	*4 20 ₱ doz.*
Jap. Funnel	*$2.70*	*3 00*	*3.30*	*3.60 ₱ doz.*

Hoes— Eye—

Scovil and Oval Pattern ..... *60&5@60&10&5%*

Grub, list Feb. 23, 1899 ..... *70@70&10%*

D. & H. Scovil 35%

Handled—

Sept. 1, 1900, List:
Field and Garden ..... *75&2%*
Ladies', Boys', Toy and Onion ..... *70&10&10%*
Street and Mortar ..... *75&7½&2%*
Cotton ..... *70&10&10&5&2%*
Planters' ..... *70&30%*
Weeding *75%*

Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.

Ft. Madison Crucible Garden Hoe ..... 75&2%

Ft. Madison Crescent Cultivator Hoe, per doz ..... 75&10&2%

Ft. Madison Mattock Hoes:
Regular Weight ..... ₱ doz. $4.50
Junior Size ..... ₱ doz. $4.00

Ft. Madison Sprouting Hoe, ₱ doz. $4.80

Ft. Madison Dixie Tobacco Hoe .. 75&20%

Kretsinger's Cut Easy, per doz .... 75&2%

Warren Hoe 60%

W. & C. Ivanhoe ..... 75&2%

B. B. Cultivator Hoe ..... 75&10&2%

Acme Weeding ..... 75&10&2%

W. & C. Lightning Shuffle Hoe, ₱ doz. $4.85

Hog Rings and Ringers—
See *Rings and Ringers.*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow Ware—
See *Ware, Hollow.*

Holders— Bit—

Angular, ₱ doz. $24.00 ..... 45&10%

Door—

Empire 50%

File and Tool—

C. E. Jennings & Co. Model Tool Holders 33⅓%

Nicholson File Holders and File Handles ..... 20&4%

Hooks— Cast Iron—

Bird Cage, Reading 60%

Bird Cage, Sargent's List ..... 50&10@60%

Ceiling, Sargent's List ..... 40&10%

Clothes Line, Hoffman's ..... 40&10%

Clothes Line, Reading List ..... 55&10@65&10&10%

Clothes Line, Sargent's List 50&10@65&10%

Coat and Hat, Sargent's List ..... 45&10%

Clothes Line, Stowell's 70%

Coat and Hat, Stowell's 70%

Coat and Hat, Reading ..... 70@75%

Coat and Hat, Wrightsville ..... 65&10%

Harness, Reading List ..... 70&10@75%

Wire—

Belt *80%*

Wire Cut H. Hooks ..... *60&10@60&10@5%*

Atlas, Coat and Hat:
Single Cases 45%
10 Case Lots ..... 45&10%

Czar Harness ..... 50&10&5%

Wire Coat and Hat:
Acme 60%
B. B 60%
V Brace, Chief and Czar 60%

Gem 60%

Bright Wire Goods—See *Wire.*

Wrought Iron—

Box, 6 in., per doz. $1.50; 8 in., $1.75; 10 in., $2.00.

Cotton ..... *doz. $1.05@1.25*

Wrought Staples, Hooks, &c.—
See *Wrought Goods.*

Miscellaneous—

Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass	*Nos.*	*1*	*2*	*3*	*4*
Best		.....	*$1.50*	*1 75*	*2.00*
Common		*$1.30*	*1.30*	*1.50*	*1.60*

Potato and Manure 70%

Whiffletrees ..... *lb. 4¼c*

Hooks and Eyes:
Brass ..... *60&10@10@70%*
Malleable Iron ..... *70&5@70&10%*

Covert Saddlery Works' Self Locking Gate and Door Hook 60%

Crown Picture ..... 50&10%

Bench Hooks—See *Bench Stops.*

Corn Hooks—See *Knives, Corn.*

Horse Nails—See *Nails, Horse.*

Horseshoes—
See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾ inch:
Competition ..... *ft. 4¼@ 4¼c*
3-ply Standard ..... *ft. 5 @ 6 c*
4-ply Standard ..... *ft. 8 @ 9 c*
3-ply extra ..... *ft. 9 @10 c*
4-ply extra ..... *ft 11 @12 c*

Cotton Garden, ¾-in., coupled:
Low Grade ..... *ft. 6 @7 c*
Fair quality ..... *ft. 8 @9 c*

Irons— Sad—

From 4 to 10 ..... *lb 2¾@3c*
B. B. Sad Irons ..... *lb. 3¼@3¾c*
Chinese Laundry ..... *lb. 5@5½c*
Chinese Sad ..... *lb. 3¼@3½*
Mrs. Potts', per set:

Nos.	*55*	*60*	*65*
	65@70c	*60@65c*	*75@80c*

New England Pressing, lb. ..... *70@75c*
3½@3¾c

Soldering—

Soldering Copper ..... *18@19*
2 lb., and up ..... *20@21c*
Covert Mfg. Co ..... 30&2%
Smith & Hemenway Co's Sets 70%

Pinking—

Pinking Irons ..... *doz. 50@60c*

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel ..... 45&2%

Covert's Saddlery Works':
Daisy ..... 60&10%
Victor ..... 60&10%
Lockport ..... 40@40&10%
Lane's Steel 33⅓%

Kettles—

Brass, Spun, Plain ..... *20@25%*

Enameled and Cast Iron—See *Ware, Hollow.*

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.—

Foster Bros.' Butcher, &c 30%

Hartzell Cutlery Co ..... 30&5%

Smith & Hemenway Co ..... 40&10%

Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ₱ doz. $3.25

Withington Acme, ₱ doz., $2.05; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List ..... *70&5@70&10%*

Adjustable Handle 25%

Bradley's 35%

Cantelo's Folding ..... 50@50&5%

C. E. Jennings & Co. Nos. 45, 46 .. 40&10%

Jennings & Grimm ..... 66⅔&5%

Swan's ..... 70&10&2½%

Watrous 25%

L. & I. J. White ..... 30&5@25%

Hay and Straw—

Lightning ..... *per doz. $5 00@5.25*

Iwan's Sickle Edge ..... ₱ doz. $10.00

Iwan's Serrated ..... ₱ doz., $11.00

Maine ..... ₱ doz. $8.50

Mincing—

Buffalo ..... ₱ gro. $15.00

Miscellaneous—

Farriers' ..... *doz. $2 00@3.00*

Woostenholm's ..... ₱ dos. $3.00@3 25

Knobs—

Base, 2¼-inch, Birch, or Maple, Rubber tip, gro ..... *$1.10@1.20*

Carriage, Jap, all sizes .. *gro. 30@33c*

Door, Mineral ..... *doz. 60@65c*

Door, Por. Jap'd ..... *doz. 65@70c*

Door, Por. Nickel ..... *doz. $2 00@2.10*

Bardsley's Wood Door, Shutter, &c .. 15%

Picture, Sargent's ..... 60&10%

Lacing Leather—
See *Belting Leather—*

Ladders, Step, Etc.—

Goshen Mfg. Co.'s Step, etc 50%

Lane's Store 25%

Myers 'Noiseless Store Ladders.....50%

Ladies' Melting—
L. & G. Mfg. Co.....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....40@40&10%

Lanterns—Tubular—
Regular Tubular.....doz. $4.35@4.75
Lift Tubular.....doz. $4.75@5.25
Hinge Tubular.....doz. $4.75@5.25
Other Styles.....40@10@40@10@5%

Bull's Eye Police—
No. 1, 2¼ inch.....$3.60
No. 2, 3 inch.....$4.00

Latches, Thumb—
Roggin's Latches.....doz. 30@33c

Lawn Mowers—
See *Mowers, Lawn.*

Leaders—Cattle—
Small.....doz. 50c; *large*, 55c
Covert Mfg. Co.....45&2%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Solid Grip, Payson Mfg. Co.....80%
R. & E.....45%

Lines—

Wire Clothes, Nos...	18	19	20
100 feet	$2.20	2.00	1.65
75 feet	$1.80	1.70	1.30

Ossawan Mills.
Crown Solid Braided Chalk.....33⅓%
Mason's, No. 0 to No. 5.....33⅓%
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3.....40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gr.....30%

Locks—Cabinet—
Cabinet Locks.....33⅓@33⅓@7⅓%

Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]
Reading Hardware Co.....50%
R. & E. Mfg. Co.....50%
Sargent & Co.....40@40&10%

Elevator—
Stowell's.....40%

Padlocks—
Wrought Iron.....70@10@5@80@5%
R. & E. Mfg. Co. Wrt Steel a d Brass.50%

Sash, &c.—
Fitch's:
Bronze and Brass.....66⅔%
Iron.....70%
Ives' Patent.:
Bronze and Brass.....66⅔%
Iron.....65%
Wrought Bronze and Brass.....55&5%
Wrought Steel.....60%
Payson's Signal.....20%
Reading.....60&10&10@70%

Machines—Boring—
Common, Upright, Without Augers, $2.00
Common, Angular, Without Augers, $2.25

Without Augers.

R. & E. Mfg. Co.:	Upright.	Angular.
Improved No. 3.	$4.25	No. 1 $5.00
Improved No. 4.	3.75	No. 2 3.38
Improved No. 5.	2.75	
Jennings'.....	2.50	3.00
Millers' Falls.....		5.75
Snell's, Rice's Pat.	2.50	2.75
Swan's, No. 500..	5.10	No. 200 6.45

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.20%
Moore's Portable Pneumatic Hoist....25%

Ice Cutting—
Chandler's.....15%

Washing—
Wayne American.....₩ doz. $28.00
Western Star, No. 2.....₩ doz. 28.00
Western Star, No. 3.....₩ doz 30.00
St. Louis, No. 41.....₩ doz. 60.00

Mallets—
Hickory.....45&5@50%
Lignumvitæ.....45&5@50%
Tinners', Hickory and Applewood, doz.....50@55c

Mats—Door—
Elastic Steel (W. G. Co.).....10%

Mattocks—
See *Picks and Mattocks.*

Meat Cutters—
See *Cutters, Meat.*

Milk Cans— See *Cans, Milk.*

Mills—Coffee—
Enterprise Mfg. Co.....25@30%
National, list Jan. 1, '94.....30%
Parker's Columbia and Victoria.....50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros Co.....30%

Mincing Knives—
See *Knives, Mincing.*

Molasses Gates—
See *Gates, Molasses.*

Money Drawers—
See *Drawers, Money.*

Mowers Lawn—
Net prices are generally quoted.
Cheap.....*all sizes, $1.90@1.95*
Good.....*all sizes, $2.25@2.50*

	10	12	14	*16-inch*
High Grade	4.25	4.50	4.75	5.00

Continental.....40&10&5%
Great American.....70&5%
Great American Ball Bearing..60&10&5%
Quaker City.....70&5%
Pennsylvania.....60&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....40%
Pennsylvania Pony.....45%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A, all Steel.....65&10%
Style E, Low Wheel.....60&10%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, low list..50&5%

Nails—
Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered, List July 20, 1899 .85&10@85&10&10%
Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos.	6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&5%
Ausable	28¢	26¢	25¢	24¢	23¢	50&10%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
Champ'in	28¢	26¢	25¢	24¢	23¢	40&10&5%
Clinton	19¢	17¢	16¢	15¢	14¢	30&10&5%
Maud S.	25¢	23¢	22¢	21¢	21¢	50%
Putnam	23¢	21¢	20¢	19¢	18¢	33⅓%
Vulcan	23¢	21¢	20¢	19¢	18¢	25&10%

American, Nos. 5 to 10 ₩ lb.....9@9½c
Neponset.....Nos. 5 to 10¢ ₩ lb 12¢
Jobbers' special brands...per lb. 8@9c

Picture

	1½	2	2½	3	3½ *in.*
Brass Head	.45	.60	.70	.95	1.00 *gro.*
Fer. Head	..	1.10	1.10	1.10	.. *gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—
See *Crackers, Nut.*

Nuts—
Cold Punched: *Off list.*
Mfrs. or U. S. Standard.
Square, plain.....$4.70@4.80
Hexagon, plain.....$4.90@5.00
Square, C. T. & R......$4.90@5.00
Hexagon, C. T. & R......$5.10@5.40
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank.....$5.00@5.10
Hexagon Blank.....$5.30@5.40
Square Tapped.....$4.80@4.90
Hexagon Tapped.....$5.10@5.20

Oakum—
Best or Government.....*lb.* 6¼c
Navy.....*lb.* 5 c
U. S. Navy.....*lb.* 5¼c
Plumbers' Spun Oakum.....2¾c
In carload lots ¼c lb. off f. o. b. New York.

Oil Axle—
Snow Flake:
1 pt. cans, per doz.....$3.00
1 qt. cans, per doz.....$4.80
1 gal. cans, per doz.....$15 00
5 gal. cans, per doz.....$66.00
33⅓&10%

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper..40&10@40&10@5%
Tin or Steel.....60&10@60&10@5%
Zinc.....60&10@60&10@5%
Paragon:
Brass and Copper.....40&10%
Tin or Steel.....60&10%
Zinc.....60&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
Wilmot & Hobbs Mfg. Co:
Spring Bottom Cans.....70@70&10%
Railroad Oilers etc.....60@60&10%

Openers—Can—
French.....*doz.* 25¢
Iron Handle.....*doz.* 25@27c
Sprague, Iron Hdle...per doz 35@40c
Sardine Scissors...doz. $1.75@$3.00
Tip Top.....per doz. $0.75
National, ₩ gro.....$1.75@$2.00
Stowell's.....per doz. 35@45¢
Waldorf, ₩ gro.....$8.65

Egg—
Nickel Plate.....per doz., $2.25
Silver Plate.....per doz., $3.50

Packing—
Asbestos Packing, Wick and Rope, 15@15½c lb.

Rubber—
Sheet, C. I......8@12c
Sheet, C. O. S......9@13c
Sheet, C. B. S......10@14c
Sheet, Pure Gum.....50@70c
Sheet, Red.....35@40c
Jenkins' Standard, ₩ lb 80¢.....25@25&5%

Miscellaneous—
American Packing.....7@10c lb.
Cotton Packing.....13@14c lb.
Italian Packing.....9@12½c lb.
Jute.....3½@4c lb.
Russia Packing.....7@11c lb.

Pails—Creamery
S. S. & Co., with gauges.. No 1 $0.50; No. 2, $4.75 ₩ doz.

Galvanized—
Price per doz.

Quart.....	10	12	14
Water, Regular	1.75	2.00	2.25
Water, Heavy....	3.40	3.60	3.80
Fire, Rd. Bottom.	2.25	2.50	3.00
Well.....	2.50	....	3.00

Pans—Dripping—
Standard List.....50¢10@50¢20%

Fry—
Common Lipped:

No.	1	2	3	4	5
Per doz.	$0.60	.75	.85	.95	1.15

Roasting and Baking—
Regal, S. S. & Co., ₩ doz., Nos. 5, $4.50; 10 $5.00; 20 $5.50; 30, $6.00
Simplex, ₩ gro., No. 40, $30.00; 50, $54.50; 60 $39 00; 140, $33.00; 150, $37.50; 160, $43.00.

Paper—Building Paper—

Asbestos:	*lb.*
Building Felt.....	3c
Mill Board, sheet, 40 x 40 inches...	4c
Mill Board, roll, thicker than 1-16 inch.....	3c
Mill Board, roll, 1-16 in. thick and less.....	3c
	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt. 25 lbs. to roll.....	$0.40
Medium wt., 30 lbs. to roll.....	$0.47
Heavy wt. 40 lbs. to roll.....	$0.60
Medium Grades Water Proof Sheathing.....	$0.65@1.25
Deafening Felt, 2, 6 and 4½ sq. ft. to lb.. ton.....	$40.00@42.00
Red Rope Roofing, 250 sq. feet per roll.....	$1.65

NOTE.—*These goods are often sold at delivered prices.*

Tarred Paper.
1 ply (roll 300 sq. ft.), ton..$29.00@32.00
2 ply, roll 108 sq. ft.....56@65c
3 ply, roll 108 sq. ft.....71@87c
Slater's Felt (roll 500 sq. ft.).....70c
NOTE.—*Above prices often include delivery.*
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—
List Dec. 23, 1899.....60@60&10%

Parers—Apple—
Advance.....₩ doz. $4.50
Baldwin.....₩ doz. $5.00
Bonanza.....each $5.00
Dandy.....each $7.50
Eureka, 1898.....each $16.00
Family Bay State.....₩ doz. $12.00
Hudson's Little Star.....₩ doz. $4.00
Hudson's Rocking Table.....₩ doz. $5.50
Improved Bay State ₩ doz. $27.00@30.00
New Lightning.....₩ doz. $5.50
Reading 72.....₩ doz. $4.00
Reading 78.....₩ doz. $7.00
Turn Table '98.....₩ doz. $5.50
White Mountain.....₩ doz. $4.00

Potato—
Saratoga.....₩ doz. $5.50
White Mountain.....₩ doz. $4.50

Paris Green— *per lb.*
Arsenic keys or casks.....11½@12½c
Kegs, 100 to 175 lbs.....12 @13 c
Kits, 14, 28, 56 lbs.....13 @14 c
Paper boxes, 2 to 5 lbs.....13 @14 c
Paper boxes, 1 lb.....13 @14 c
Paper boxes, ½ lb.....14 @15 c
Paper boxes, ¼ lb.....15 @16 c

Picks and Mattocks—
List Feb. 23, 1899.....70@70¢10%

Pigeons—Clay
Markle's Black Birds, f. o. b. factory, per M.....$3.75
See also *Traps, Target.*

Pinking Irons—
See *Irons, Pinking.*

Pins—Escutcheon—
Brass.....60@60¢10%
Iron, list Nov 11, '85.....60@60¢10%

Pipe, Cast Iron Soil—
Standard, 2-6 in......60¢7½%
Extra Heavy, 2-6 in......70%
Fittings.....75¢5%

Pipe, Merchant, Boiler Tubes, &c.—

Merchant Pipe.	*Black.*	*Galvanized*
⅛ to ½ *inch*	56%	43%
¾ to 12 *inch*	64%	41%
Boiler Tubes.	*Steel.*	*Up to 22 feet.*
1 to 1½ inch, inclusive		47½%
2¼ to 5 inch, inclusive		65%
1¾ to 2½ and 6 to 13 inches		60%
Iron.		
1 to 1½ inch and 2½ in.		43½%
1¾ to 2¼ inch		53%
2¾ to 13 inch		53%
Casing, Cut Lengths.	*S. & S.*	
2 to 3 inch.....	51½%	
3¼ to 4 inch.....	57½%	
4½ to 12½ inch.....	59½%	

Pipe Sewer—
Standard Pipe and Fittings, 2 to 24 in.
New England.....70%
New York and New Jersey.....73%
Maryland, Delaware, East Penn......75%
West Penn. and West Va......75%
Virginia.....78%
Ohio, Michigan and Ky......8 %
Carload lots are generally delivered.

Planes and Plane Irons—
Wood Planes—
Molding.....40¢2½@40¢10%
Bench, First quality 45¢10@45¢10¢5%
Bench, Second qual. 20¢10@50¢10¢5%
Bailey's (Stanley R. & L. Co)
25&10@25&10@10%
Gage Self Setting.....35%

Iron Planes—
Bailey's (Stanley R. & L. Co).....
25&10@25&10@10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10@25&10@10%
Sargent's.....50&10&10%

Plane Irons—
Wood Bench Plane Irons.....
30¢5@30¢10¢5%
Buck Bros.....30%
Stanley R. & L. Co...20&10@20&10&10%
L. & L. J. White.....20&25@25%

Planters, Corn, Hand.
Kohler's Eclipse.....₩ doz. $9.00

Plates—
Fellos.....*lb* 3¼@4c
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $3.00.....50%

Pliers and Nippers—
Button Pliers.....75@75¢10%
Gas Burner, per doz., 5 in., $1.15@ $1.20; 6 in., $1.35@$1.45
Gas Pipe..

	7	8	10	12-in.
	$1.75	$2.00	$2.75	$3.75

Acme Nippers.....50@50&5%
Bernard's:
Parallel Pliers, &c.....35%
Paragon Pliers.....50&5%
Lodi Pliers.....50&5%
Elm City Fence Pliers.....35%
Cronk Hanger Co.:
American Button.....75&10%
Cronk's.....60%
Improved Button.....70&10%
Stub's Pattern.....50%
Combination and others.....25%
Heller's Farriers' Nippers, Pincers, and Tools 50@50&5%
P., S. & W. Tinners' Cutting Nippers, 30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers all kinds.....40%

Plumbs and Levels—
Plumbs and Levels.....75@75¢10%
Davis Iron, Machinist Nos. 1 to 14....20%
Davis Iron, Adjustable Nos. 6 to 49....35%
Disaron's.....70%
Pocket Levels.....73&10&10@75&10%
Stanley R. & L. Co .....40@40&10&10%
Stanley's Duplex.....20@20&10&10%
Woods' Extension.....33⅓%

Poachers, Egg—
Buffalo Steam Egg Poachers, ₩ doz., No. 1, $7.20; No. 2, $11.00 No. 3, $11.00; No. 4, $14.50.....50%

Points, Glaziers'—
Bulk and 1 lb. papers..*lb.* 8 c@..
½-lb. papers.....*lb.* 8½c@..
¼-lb. papers.....*lb.* 9 c@..

Pokes, Animal—
Ft. Madison Hawkeye.....₩ doz. $3.25
Ft. Madison, Western.....₩ doz. $3.75

Police Goods—
Manufacturers' Lists.....25@25&5%
Tower's.....25%

Polish—Metal—
Prestoline Liquid, No. 1 (½ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.72.....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ½ lb boxes, ₩ doz. $1.25; 1 lb boxes, ₩ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₩ doz. $1.25; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₩ doz.....$2.00

Stove—
Black Eagle Benzine Paste, 5 lb cans ... ₩ lb 10¢
Black Eagle, Liquid, ½ pt. cans..... ₩ doz. 75¢
Black Jack Paste, ¾ lb cans. ₩ gro. $9.00
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ₩ gr. $5.75.....10%
Dixon's Plumbago.....₩ lb 8¢
Fireside.....₩ gr. $2.50
Gem, ₩ gr. $4.50 .....10%
Japanese.....₩ gr. $3.50
Jet Black.....₩ gr. $3.50
Peerless Iron Enamel, ½ pt. cans..... ₩ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box. .....₩ doz. $1.00
Black Silk, 5 oz. box.....₩ doz. $0.75
Black Silk, ½ pt. liq.....₩ doz. $1.00

Poppers, Corn—
Round or Square:
1 qt.....*gro.* $7.00@$7.50
1½ qt.....*gro.* 9 50@ 10.00
2 qt.....*gro.* 10.50@ 11.00

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Potato Parers—
See *Parers, Potato.*

Pots—Glue—
Enameled.....45%
Tinned.....40%

Powder—
In Canisters:
Duck, ½ lb. each.....45c
Fine Sporting, 1 lb. each.....75c
Rifle, ½-lb. each.....15c
Rifle, 1-lb. each.....25c
In Kegs:
Duck, 6½-lb. kegs.....$2.25
Duck, 12½-lb. kegs.....$4.25
Duck, 25-lb kegs.....$8.00
Rifle, 6¼-lb kegs.....$1.25
Rifle, 12½-lb. kegs.....$2 25
Rifle, 25-lb. kegs.....$4 00
King's Semi-Smokeless:
Keg (25 lb bulk).....$6 50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk) $1.90
Case 24 (1 lb cans bulk).....$8.50
Half case 12 (1 lb cans bulk).....$4 50

King's Smokeless:	Shot Gun	Rifle
Keg (25 lb bulk).....	$12 00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)..	14.00	17 00
Half case 12 (1 lb cans bulk)	7.25	8 75

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....30@25%
Seal Presses—
Morrill's No 1, per doz. $20 00.....50%
Morrill's No 2, per doz. $22 50 .....50%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—
Cyclops.....40@40&10%
Miller's Falls, No. 3, per doz. $12.00..... 15&10%
Pearson No. 1, Cyclone Spike Puller each $30.00 .....5 %
Pelican, ₩ doz. $9.00.....4 &10%
Samson.....₩ doz $18.00
Scranton, Case Iots:
No. 1 (large), ₩ doz. $6.50; No. 2 (larger, $5.75; No 3 (small), $5.00; No. 2-B (large), $5.50; No. 3-B (small), $5.00; No 2-D (large), $4 50; No 3-D (small) $4.00.
Smith & Hemenway Co.:
Diamond B, No. 2, ca e lots ₩ doz $6.00
Diamond B, No. 2, case lots ₩ doz $5.5-
Giant, No. 1, ₩ doz. $18; No. 2, $1 .50; No. 3, $15..... 40%

Pulleys—Single Wheel—

Inch.....	2	2½	3
Awning ..doz.	$0.45	.70	.95
Inch	2	2¼	2½
Hay Fork, Swivel or Solid Eye.....	*doz.*	$1.35@1.50	
Hot House..doz	$0.65	.90	1.20
Inch.....	1¼	1½	1¾ 2
Screw.....*doz.*	$0.15	.20	.25 .30
Inch.....	1¾	2	2¼ 2½
Side.....*doz.*	$0.30	.40	.55 .60
Inch.....	1½	1¾	2 2½
Tackle....*doz.*	$0.30	.45	.65 1.10

Stowell's:
Ceiling or End, Anti-Friction.....60%
Dumb Waiter, Anti-Friction...60&10%
Hay Fork, Anti-Friction, 5-in. Wheel, ₩ doz. $12.00..... .....50%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—
Common Frame: Square or Round End per doz., 1¾ in., 13c: 2 in., 16c
Auger Mortise, no Face Plate, per doz. 1¾ in., 12c: 2 in., 15c:
Auger Mortise, with Face Plate, per doz., 1¾ in., 13c.: 2 in., 15½c.

Acme.....1¾ in., 16¢; 2 in., 19¢
Common Sense, 1¾ in.... ₱ doz., 18¢; 2 in., 20¢.
Fox-All-Steel, Nos. 3 and 7, 2¼ in.....
₱ doz. 25¢
No. 9, 1¾ in.....₱ doz. 20¢
Extra for Plated Finish...₱ doz. 20¢
Extra for Anti-Friction Bronze Bushing.....₱ doz 10¢
Grand Rapids All Steel Noiseless....40%
Ideal No. 13.....1¾ in.. ₱ doz.. 16¢
Niagara.....1¾ in. 16¢; 2 in. 19¢
No. 26, Troy...1¾ in., 14¾¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&10%
Pitcher Spout.....75@75&10%
Wood.....50@50&10%
Pump Leathers, Lower and Plunger Valves—Per gro.:

Inch..	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch..	3	3¼	3½	3¾	4
	$3.30	3.60	3.85	4.10	4.40

Barnes Dbl. Acting (low list)..... 50%
Flint & Walling's Fast Mail (low list).50%
Flint & Walling's Pitcher Spout.....75%
Loud's Suction Pumps, U. S. Co.....20%
Myer's Pumps, low list.....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....30%

Punches—

Revolving (4 tubes)...doz. $3.75@4.25
Saddlers' or Drive, good..doz. 65@70c
Spring, single tube, good quality...
$1.65@1.75
Bemis & Call Co.'s Cast Steel Drive...50%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50%
Morrill's No. 1 (A.B.C.), ₱ doz., $15.00..50%
No. 2, ₱ doz. $22.50.....50%
No. 2, Metal, ₱ doz., $45.00.....50%
Bench Punch, each, $40.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B & K. Mfg. Co.....40%
Tinners' Hollow, P., S. & W. Co.....
35@35&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....60%

Rail— Barn Door, &c.—

Cast Iron, Barn Door: Flange Screw Holes for Rd. Groove Wheels:

⅛	⅜	¾	In.
$1.70	$2.10	$3.00	100 feet.

Angular for Sq. Groove Wheels:

Small.	Med.	Large.	
$1.60	1.95	2.70	100 feet.

Sliding Door, Brnzed Wr't Iron, ft. 6½c
Sliding Door, Iron Painted....2½@3c
Sliding Door, Wrought Brass, 1¼ in..... lb. 36c. 30%
Cronk's Double Braced Steel Rail. ₱ foot.....3¼¢
Cronk's O. N. T. Rail.....3¼¢
Lanes' O. N. T., ₱ 100 ft., 1 inch...$2.85
Lanes' Standard, ₱ 100 ft.....3.75
Lawrence Bros.' .....₱ ft. 4¼¢
McKinney's None Better.....₱ ft. 3¼¢
McKinney's Standard.....₱ ft. 4 ¢
Stowell's Cast Rail.....1¾¢
Stowell's Steel Rail, Plain.....2¾¢
Stowell's Wrought Bracket, Plain.. 3¼¢

Rakes—

Net Prices, Malleable Rakes:

	10	12	14	16-tooth
Shank	$1.50	1.60	1.75	1.85
Socket	$1.65	1.80	1.95	2.10

Sept. 1, 1900, List:
Cast Steel.....70¢&5¢&2%
Malleable.....70¢&10¢&75¢&5%
Lawn Rakes, Metal Head, per doz.,
20 teeth.....$3.25@3.50
24 teeth.....$3.60@3.75
Fort Madison Red Head Lawn.....$3 25
Fort Madison Blue Head Lawn.....$3.00
Jackson Lawn, 29 and 30 teeth.....
₱ doz. $4.00
Kohler's:
Lawn Queen, 20-tooth, ₱ doz.....$3.60
Lawn Queen, 24-tooth, ₱ doz.....$3.75
Paragon, 20-tooth, ₱ doz.....$2.85
Paragon, 24-tooth, ₱ doz.....$3.00
Steel Garden, 14-tooth, ₱ doz.....$3.00
Malleable Garden, 14-tooth ₱ doz. $2.25

Rasps, Horse—

Disston's.....75%
Heller Bros.....70&5%
McCaffrey File Co Horse Rsps.60&10&5%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razors—

Boracic.....70%
Fox Razors, No. 42...₱ doz. $40.00 } 20%
Fox Razors, No 44...₱ doz. $24.00 } off
Fox Razors, No. 82, Platina, ₱ doz. $24.00 }
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 90.....$12.00
All other Razors.....40%
Safety Razors.....40%

Razor Strops—

See *Strops, Razor.*

Reels— Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon; Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 203 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502R, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 00290¢PN, 0924 and 0924N, 5009N and PN.....40&10%
Shakespeare, Style C.....25%

Registers—

List Sept. 2, 1901.

Black Jap.....
White Jap..... } 75¢@75¢&
Bronzed..... } 10¢&10%
Nickel Plated.....
Electro Plated.....
There is a good deal of irregularity in prices of Registers.

Revolvers—

Single Action.....85@90c
Double Action, except 44 calibers..$1.50
Double Action, 44 calibers.....$1.65
Automatic.....$3.10
Hammerless.....$3.60

Riddles, Grain or Sand—

16 in. per doz.....$2.00@$2.25
17 in. per doz.....$2.25@$2.50
18 in., per doz.....$2.50@$2 75

Rings and Ringers—Bull Rings—

	2	2¼	3 Inch.
Steel	$0 80	0.90	0.95 doz.
Copper	1.10	1.25	1.50 doz.

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $4.00@4.50
Hill's Ringers, Gray Iron, doz. 55@60c
Hill's Ringers, Mal. Iron, doz. 75@80c
Blair's Rings.....per gro. $5.00@5.25
Blair's Ringers...per doz. $0.60@ .65
Brown's Rings....per gro. $6.00@6.25
Brown's Ringers..per doz. $1.00@1.10
Rapid Rings.....₱ gro. $6.00
Rapid Ringers.....₱ doz. $3.50

Rivets and Burrs—

Copper.....50¢&10@50¢&10¢&5%
Iron or Steel:
Tinners'.....70@70¢&10%
Miscellaneous.....70@70¢&10%

Rivet Sets—See *Sets*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....50&10&10%
Cronk's Stay.....60&5%
Cronk's Brinkerhoff.....66⅔
Lane's, Stay.....33⅓%
Stowell's Barn Door Stay...₱ doz. $1.25

Rope—

Manila, 7-16 in. and larger, tarred or untarred..... *lb. 13½c*
Manila.....⅜-inch *lb. 14 c*
Manila..... *¼ and 5-16 inch lb. 14½c*
Manila, Hay, Hide and Bale Bale Rope, Medium and Coarse..... *lb. 13½c*
Sisal, 7-16 in. and larger lb. 10 @10½c
Sisal.....¾-inch..*lb. 10½@1 3¼c*
Sisal ¼ and 5-16 in....lb. 11 @11¼c
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse..... *lb. 10½@10¾c*
Sisal, Tarred, Medium Lath Yarn.....*lb. 9¼@ 9½c*
Cotton Rope:
Best.....¼-*in. and larger lb. 13½c*
Medium.....¼-*in. and larger lb. 11 c*
Com.....¼-*in. and larger lb. 9 c*
Jute Rope:
Thread No. 1, ¼ in. and up lb. 6½c
Thread No. 2, ¼-in. and up lb. 6 c
Yarn, ¼ in and up..... *lb. 4½c*

Wire Rope—

Galvanized.....25¢7½&%
Plain.....30¢7½&%

Ropes, Hammock—

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....60&5%

Rules—

Boxwood.....60@60¢10%
Ivory.....35¢10@35¢10¢10%
Chapin-Stephens Co.:
Boxwood.....60@60&10%
Ivory.....35&10@35&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Stanley R. & L. Co.:
Boxwood.....60@60&10%
Ivory.....35@35&10&10%
Upson Nut Co.:
Boxwood.....60@60&10%
Ivory.....35&10@35&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers Sausage.*

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins:
Circular.....50@50&10%
Band.....50&10@60%
Cross-Cuts.....35&5%
Mulay, Mill and Drag.....50&10%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Diamond Saw and Stamping Works:
Sterling Kitchen Saws.....35%
Disston's:
Circular Solid and Inserted Tooth.50%
Band 2 to 14 in. wide.....60%
Band ¼ to 1¾.....70%
Crosscuts.....45@45&10%
Narrow Crosscuts.....50@50&10%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35@35&7½%
Woodsaw Blades.....40@40&7½%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 79, 77, 8.....25@25&7½%
Hand Saws, Nos 7 107, 107½ S. 1, 0, 00, Combination.....30@30&7½%
Compass, Keyhole, &c.....25@25&7½%
Butcher Saws and Blades..35@35&7½%
C. E. Jennings & Co.'s.:
Back Saws.....25%
Butcher Saws.....35%
Compass and Key Hole Saws.....25%
Framed Wood Saws.....40%
Hand Saws.....25@30%
Wood Saw Blades.....45%
Peace:
Circular and Mill.....50%
Cross Cuts, list Jan. 1, '99.....50%
Hand, Panel and Rip.....30%
Richard on:
Circular and Mill.....50%
Hand, &c.....30%
X Cuts, list Jan. 1, '99.....50%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws..50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Compass, Keyhole, &c.....25@25&7½%
Wood Saws.....35@35&7½%

Hack Saws—

Disston:
Concave Blades.....25%
Keystone.....30%
Hack Saw Frames.....30%
C. E. Jennings & Co's:
Hack Saw Frames, Nos. 175, 180, 330.....40%
Hack Saws, Nos. 175, 180, 330, complete.....40%
Griffin's Hack Saw Frames.....45%
Griffin's Hack Saw Blades.....45%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades.....25%
Sterling Hack Saw Frames.....20%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scale Beams—

See *Beams, Scale.*

Scales—

Family, Turnbull's.....30@30¢10%
Counter:
Hatch. Platform, ½ oz to 4 lbs. doz $5.50
Two Platforms, ½ oz to 8 lbs. doz. $16
Union Platform, Plain..$1.70@1.90
Union Platform, Striped $1.85@2.15
Chatillon's:
Eureka.....25%
Favorite.....40%
Grocers' Trip Scales.....50%
Pelouze Scales—Household, Counter, Confectionery, Postal, Ice, &c.....20%
"The Standard" Portables.....45%
"The Standard" R. R. and Wagon....50%

Scrapers—

Box. 1 Handle.....*doz $2.25@2.50*
Box. 2 Handle.....*doz. $3.75@4.00*
Ship, No. 1, doz. $3.50; No 2, $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30@30&10%

Screens, Window, and Frames—

Bonanza Window Screens.....60@60&5%
Flyer Pattern Window Screen..60@60&5%
Maine Window Screen Frames.40&10&5%
Perfection Window Screens.....60@60&5%
Phillips' Window Screen Frames..... 60@60&5%
Porter's Hummer Window Screens... 60@60&5%
Porter's Klondike Window Screens..... 60&2½@60&7½%
Wabash Spring Adj. Screen.....50%
See also *Doors.*

Screw Drivers—

See *Drivers, Screw.*

Screws—Bench and Hand—

Bench, Iron..doz. 1 in., $3.00@3.25; 1¼, $3.50@3.75; 1¼, $4.00@4.50
Bench, Wood, Beech..doz. $3.50@2.75
Hand, Wood.....*30¢&5@40%*
Hand, R. Bliss Mfg. Co.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99.....*75¢&5@...%*
Coach and Lag, Gimlet Point, list Oct. 1, '99.....*75@...%*
Hand Rail, list Jan. 1, '81.60¢10@...%

Jack Screws—

Standard List.....75@75¢10%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50@50&%
Sargent.....70&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.50@50¢10%
Flat or Round Head, Brass50@50¢10%

Set and Cap—

Set (Iron or Steel).....70%
Sq. Hd. Cap.....65%
Hex. Hd. Cap.....65%
Rd. or Fillister Hd. Cap.....60%

Wood—

List Jan. 1, 1900.
Manufacturers' printed discounts:
Flat Head, Iron.....87½@90%
Round Head, Iron.....85@87½%
Flat Head, Brass.....85@87½%
Round Head, Brass.....82½@85%
Flat Head, Bronze.....75@80%
Round Head, Bronze.....72½@77½%
Drive Screws.....87½@90%
NOTE.—*Extra 10@10&5% often given.*

Scroll Saws—See *Saws, Scroll.*

Scythes—*Per doz.*

Clipper Pattern, Grass.....$4.25
Full Polished Clipper.....$4.75
Grain.....$7.00
Clipper, Grain.....$7.50
Wood and Bush.....$4.50

Scythe Snaths—

See *Snaths, Scythe.*

Seeders— Raisin—

Enterprise.....35&30%

Sets— Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls doz. $2.00@2 25
Wood Hdle., 14 Awls, 6 Tools... doz. $2.50@2.60
Aiken's Sets, Awl and Tools:
No. 20, ₱ doz. $10.00.....50&10&10%
Fray's Adj. Tool H dls., Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2 $4.00; No. 3, $5.50.....40&30&10&10%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—

Square.....*per gro. $2.50*
Round, Blk. and Pol., assorted..... *gro. $1.80@2.50*
Octagon.....*gro. $4.25@4.75*
Knurled, Good.....*gro. $6.00@6.50*
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Mayhew's.....per gro. $9.00
Snell's Corruzated, Cup Pt. per gro. $7.50
Snell's Knurled, Cup Pt....per gro $7.50

Rivet—

Regular list.....70@70¢10¢5%

Saw—

Aiken's:
Genuine.....₱ doz. $5.50@6.00
Imitation.....₱ doz. $3.00@3.10
Atkin's.:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co's.:
Cross Cut.....30%
Hammer, new Pat.....45%
Plate.....20%
Spring Hammer.....30%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.63.....50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.63.....50%
No. 1 Old Style, $10.00.....50%
Taintor Positive, ₱ doz. $18.....60%

Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....65%
Smith & Hemenway Co.....70&5%
Tanite Mills ₱ gross, $14.40....25@33⅓%

Sharpeners, Skate—

Eureka Skate Sharpener.....₱ doz. $2.00

Shaves, Spoke—

Iron.....*doz. $1 00@1.25*
Wood.....*doz. $1.75@2.00*
Bailey's (Stanley R. & L. Co.).....
50@50&10&10%
Goodell's, ₱ doz. $9.00.....15&10%

Shears—

Cast Iron...	7	8	9 in.
Best	$16.00	18.00	20.00 gro.
Good	$13.00	15.00	17 00 gro.
Cheap	$5.00	6.00	7.00 gro.

Straight Trimmers, &c.:
Best quality, Jap.....70@70¢10%
" *Nickel*.....60@60¢10%
Fair qual. Jap.....80@80¢5%
" *Nickel*.....75@75¢10%
Tailors' Shears.....40@40¢10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....1900 list, 50%

Tinners' Snips—

Steel Blades.....20¢10%
Steel Laid Blades.....40¢10%
Forged Handles, Steel Blades, Berlin.. 40@40&10%
Jennings & Griffin Mfg. Co's. 7 to 10 inch.....50%
Niagara Snips.....40%
P. S. & W. Co.....20%

Pruning Shears and Tools—

Cronk's Grape Shears.....33⅓%
Cronk's Pruning Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 .....25@25&10%
John T. Henry Mfg. Company:
Pruning Shears, all grades.....40@40&5%
Orange Shears.....50&10@50&20%
Grape.....40&10@50%
Tree Pruners.....75%
Nagley's Pruning Shears.....10&5%
P., S. & W. Co.....33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller Hatfield's, Sargent's list. 75&10&10%
Reading.....70&10@75%
R. & E. list.....33⅓%
Wrightsville, Hatfield Pattern.....80%

Sliding Shutter—

Reading list.....70&10&75%
R. & E. list.....33⅓%
Sargent's list.....50&16⅔&10%

Shells— Shells, Empty—

Brass Shells, Empty:
First quality, all gauges.....60&5%
Climax, Club, Rival, 10 and 12 gauge.. 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, New Victor, Repeater, Yellow Rival, 10, 12, 15 and 20 gauge.....20%
Climax Union, League, New Rival 10 and 12 gauge.....25%
Climax Union, League, New Rival 14, 16 and 20 gauge ($7.50 list)..30%
Expert Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓&5%

Shells, Loaded—

Loaded with Black Powder.....40¢5%
Loaded with Smokeless Powder, medium grade.....40¢10%
Loaded with Smokeless Powder, high grade.....40¢10¢10¢5%

Shoes, Horse, Mule, &c.—

F. o. b., Pittsburg.

Iron.....*per keg $3.20*
Steel.....*per keg 3.35*
Burden's, all sizes, ₱ keg.....$3.60

Shot—

Drop, up to B, 25-lb. bag.....*$1.35*
Drop, B and larger, per 25-lb. bag.. *$1.60*
Buck, 25-lb. bag.....*$1.60*
Chilled, 25 lb. bag.....*$1.60*
Dust Shot, 25-lb. bag.....*$1.10*
Markle's Chilled.....$1.60
Raymond Chilled.....$1.60

Shovels and Spades—

Association list, March, 1902..... *40%*

Sieves and Sifters—

Hunter's Imitation..gro. $11.00@13.50
Buffalo Metallic Blued, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$12.90	$13.80	$15.00

F. J. Meyers' Mfg. Co.:
Eclipse ... ₱ gr. $11.00
Electric Light ... ₱ gr. $11.00
Hunter's Genuine ... ₱ gr. $12.50
No Name, Hunter's ... ₱ gr. $11.00
Standard ... ₱ gr. $11.00
Shaker (Barler's Pat.) Flour Sifters. ₱ doz., $2.00 ... 30%

Sieves, Tin Rim—
Per dozen

Mesh	14	16	18	20
Black, full size	$0 95	.98	1.00	1.10
Plated, full size	.$1.05	1 08	1.10	1.20
Black, scant		$0.78	.80	.83

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested, doz ... $0.65@0 75
Mesh 20, Nested, doz ... .75@ .85
Mesh 24, Nested, doz ... .90@1.00

Sinks—
Cast Iron—
Standard list ... 65&10@70 ..%
NOTE.—*There is not entire uniformity lists used by jobbers.*

Wrought Steel—
New Era, Galv'd and Enameled ... 70&5%
New Era, Painted ... 50&10%
L. & G. Mfg. Co., Galvanized ... 50%
L. & G. Mfg Co. Enameled ... 50%

Skeins, Wagon—
Cast Iron ... 70&10@75%
Malleable Iron ... 40&10@50%
Steel ... 40@40&10%

Slates—
Factory Shipments.
"D" Slates ... 50&10&10&10%
Unexcelled, etc., Noiseless Slates ... 60 & 8 tens %
Victoria, etc., Noiseless Slates ... 60 & 7 tens &5%
Wire Bound ... 50&10&5%
Web Hinge ... 5%

Slaw Cutters—See *Cutters.*
Slicers, Vegetable—
Sterling $2.00 ... 33⅓

Snaps, Harness—
German ... 40@40&10%
Covert Mfg. Co.:
Deroy ... 35&2%
High Grade ... 45&2%
Jockey ... 40&2%
Trojan ... 45&2%
Yankee ... 35&2%
Yankee, Roller ... 30&2%
Covert's Saddlery Works:
Crown ... 60%
German ... 60%
Model ... 60%
Triumph ... 60%
W. & E. T. Fitch Co.:
Bristol ... 40&10%
Empire ... 50&5%
German ... 40%
National ... 50&5%
Perfect ... 45%
Clipper ... 50&5%
Champion ... 40%
Security ... 40%
Victor ... 60&5%
Oneida Community:
Solid Steel ... 65@65& 0%
Solid Swivel ... 65&10@65&10&10%
Sargent's Patent Guarded ... 66⅔&10%

Snaths—
Scythe ... 50@50&10%

Snips, Tinners'—See *Shears.*
Soldering Irons—
See *Irons, Soldering.*
Spoke Trimmers—
See *Trimmers, Spoke.*
Spoons and Forks—
Silver Plated—
Good Quality ... 50&10@60&10&5%
Cheap ... 40@40&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton ... 40&10%
Rogers & Bro., William Rogers Eagle Brand ... 50&10%
Anchor, Rogers Brand ... 60%
Wm. Rogers & Son ... 60&10%
Simeon L. & Geo. H. Rogers Co.:
Silver Plated Flat Ware ... 6%
No. 17 Silver Plated Ware ... 60&10%

Miscellaneous—
German Silver ... 60&10@60&10&10%
Cutlerangus Cutlery Co.:
Yukon Silver ... 50%
Simeon L. & Geo. H. Rogers Co.:
German or Nickel Silver, Special list ... 1 &10%

Tinned Iron—
Teas ... per gro. 45@5.40
Tables ... per gro. 90c@$1.00

Springs—Door—
Gem (Coil) ... 20%
Star (Coil) ... 30%
Torrey's Rod, 39 in. ... ₱ doz. $1.10@1.25
Victor (Coil) ... 50&10&10%

Carriage, Wagon, &c.
1¼ in. and Wider:
Black or ½ Bright, lb ... 5 c
Bright, lb ... 5½c
Painted Seat Springs:
1½ x 2x 26 and smaller, per pr 48@53c
1½ x 3 x 28 per pr ... 56@61c
1¼ x 3 x 28 and narrower, per pr ... 75@80c
Cliff's Springs:
Bolster ... 40%
Seat ... per pair 50c
Pole, per pair, ¾ in. $1.10; ¾ in. $1.25

Sprinklers, Lawn—
Enterprise ... 25@30%
Philadelphia No. 1, ₱ doz. $13; No. 2, $15; No. 3, $24 ... 30%

Squares—
Nickel plated ... } *List Jan. 5, 1901*
Steel and Iron ... } 75@75&10%
Rosewood Hdl. Try Square and T-Bevels ... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels. ... 40&10@40&10&10%
Disston's Try Sq. and T-Bevels ... 50&10%
Winterbottom's Try and Miter ... 40&10 & 10&10%

Squeezers—Lemon—
Wood, Common, gro. ... No. 0, $5.25 @$5.50; No. 1, $6.25@$6.50.

Wood, Porcelain Lined.
Cheap ... doz. $2.00@2.75
Good Grade ... doz. $3.00@3.50
Tinned Iron ... doz. $0.75@1.25
Iron, Porcelain Lined doz. $2.90@3.25
Jennings' Star ... ₱ doz. $1.85@1.90

Staples—
Barbed Blind ... lb. 6@6¼c
Electricians', Association list ... 80&10&10&10%
Fence Staples, same price as Barbed Wire. See Trade Report.
Poultry Netting, Staples ... per lb. 2¼@2¼c
Grand Crossing Tack Co.'s list ... 80&10%

Steels, Butchers'—
Dick's ... 30%
Foster Bros' ... 30%
Hartzell Cutlery Co ... 60&5%
C. & A. Hoffmann's ... 40%

Steelyards ... 25@25&10%

Stocks and Dies—
Blacksmiths' ... 40@40&10%
Gardner Die Stocks No. 1 ... 50%
Gardner Die Stocks, larger sizes ... 40%
Green River ... 25%
Lightning Screw Plate ... 25%
Little Giant ... 25%
Reece's New Screw Plates ... 25@30%
Curtis Reversible Ratchet Die Stock. 25%

Stone—
Scythe Stones—
Chicago Wheel & Mfg. Co:
Gem Corundum, 6 inch, $8.00 per gro., 12 inch, $10.
Pike Mfg. Co. 1901 list:
Black Diamond S. S. ... ₱ gro. $12.00
Lamoille S. ... ₱ gro. $11.00
White Mountain S. S. ... ₱ gro. $9.00
Green Mountain S. S. ... ₱ gro. $6.00
Extra Indian Pond S. S. ₱ gro. $7.50
No. 1 Indian Pond S. S. ₱ gro. $7.00
No. 2 Indian Pond S. S. ₱ gro. $4.50
Leader Ed End S. S. ... ₱ gro. $4.50
Balance of 1901 list 33⅓%

Oil Stones, &c.
Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit ... 50%
Gem Corundum Axe, Single or Double Grit ... 55%
Gem Corundum Slips ... 55%
Gem Corundum Razor Hones ... 50%
Pike Mfg. Co. 1901 list: ₱ ₱
Arkansas Stone, No. 1, 3 to 5½ in. $2.80
Arkansas Stone, No. 1, 5 to 8 in. $3.50
Arkansas Slips No. 1 ... $4.00
Lily White Washita 4 to 8 in ... 60¢
Rosy Red Washita, 4 to 8 in ... 60¢
Washita Stone, Extra, 4 to 8 in. 50¢
Washita Stone, No. 1, 4 to 8 in. 40¢
Washita Stone, No. 2, 4 to 8 in. 30¢
Lily White Slips ... 90¢
Rosy Red Slips ... 90¢
Washita Slips, Extra ... 80¢
Washita Slips, No. 1 ... 70¢
India Oil Stones (entire list) ... 25%
Hindostan No. 1, Regular ... ₱ ₱ 8¢
Hindostan No. 1, Small ... ₱ ₱ 10¢
Axe Stones (all kinds) ...
Turkey Oil Stones, ex. 5 to 8 in. ₱ ₱ 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ... 10¢
Sand Stone ... 5¢
Belgian, German and Swaty Razor Hones ... 40%
Natural Grit Carving Knife Hones, ₱ doz ... $3.00
Quick Edge Pocket Knife Hones, ₱ doz ... $2.00
Mounted Kitchen Sand Stone, ₱ doz ... $1.50
Tanite Mills:
Emery Oil, ₱ doz. $5.00 ... 50@60%

Stoners—
Cherry—
Enterprise ... 25@30%

Stops, Bench—
Millers Falls ... 15&10%
Morrill's ... ₱ doz., No. 1, $10.00 ... 50%
Mo lls, No. 2, $12.50 ... 50%

Stops, Window—
Ives' Pitent ... 25&5%

Stove Boards—
See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Strainers, Pump—
Diamond Joe Pump Strainers, per doz. 75¢

Straps, Box—
Cary's Universal, case lots ... 20&10%

Stretchers, Carpet—
Cast Iron, Steel Points ... doz. 55@65c
Socket ... doz. $1.75

Strops, Razor—
Smith & Hemenway Co ... 70%

Stuffers, Sausage—
Enterprise Mfg. Co. ... 25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97 ... 30%

Sweepers, Carpet—
National Sweeper Co.: Per doz
Marion, Roller Bearing, regular finishes, full Nickel ... $24.00
Marion Queen, Roller Bearing, Fancy Veneers, full Nickel ... $27.00
Monarch, Roller Bearing, Nickel ... $22.00
Monarch, Roller Bearing, Japned ... $20.00
Marion Queen, Roller Bearing, Regular Finishes, full Nickel ... $24.00
Transparent, Roller Bearing, Plate Glass Top, Nickel ... $32.00
Monarch Extra, Roller Bearing, (17-inch case), Nickel ... $36.00
Monarch Extra, Roller Bearing (17-inch case) Japanned ... $38.00
Perpetual, Regular Bearings, Nickel ... $20.00
Perpetual, Regular Bearings, Jap. $18.00
NOTE.—*Discount of 30c per dozen on three-dozen lots. Discount of $1 per dozen on five-dozen lots.*

Tacks Brads, &c.—
List Jan. 15, '99.
Carpet Tacks, American ... 90¢25@ ... %
American Cut Tacks ... 90¢20@ ... %
Swedes Iron Tacks ... 90¢25@ ... %
Swedes Upholsterers' Tacks ... 90¢50@ ... %
Gimp Tacks ... 90¢50@ ... %
Lace Tacks ... 90¢40@ ... %
Trimmers' Tacks ... 90¢25@ ... %
Looking Glass Tacks ... 70¢10%
Bill Posters' and Railroad Tack ... 90¢40@ ... %
Hungarian Nails ... 80¢15%
Common and Patent Brads ... 80¢10%
Trunk and Clout Nails ... 80¢5%
NOTE.—*The above prices are for Straight Weights.* An extra 5% is given Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—
Double Point Tacks ... 90¢6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list ... 50¢10@60%
See also *Nails, Wire.*

Tanks, Oil—
Emerald, S. S. & Co ... 30-gal. $3.20
Emerald, S. S. & Co ... 60-gal., $4.00
Queen City S. S. & Co., 30-gal ... $3.50
Queen City S. S. & Co., 60-gal ... $4.25

Tapes, Measuring—
American Asses' Skin ... 40¢10@50%
Patent Leather ... 25@30¢5%
Steel ... 40@40¢5%
Chesterman's ... 25@25¢5%
Eddy's Steel ... 40@40&5%
Eddy's Metallic ... 33⅓@33⅓&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899 ... 35%
Lufkin's Steel ... 33⅓@33⅓%
Lufkin's Metallic ... 30@30&5%

Teeth Harrow—
Steel Harrow Teeth, plain or headed, base per lb ... 2¼c

Thermometers—
Tin Case ... 80¢10@80¢10¢5%

Ties, Bale—Steel.
Single Loop ... 80@80¢10%
Improved, Monitor, Cross Head, Etc ... 70%

Ties, Wall—
Cleveland Wire Spring Co.:
Galv. Steel 5-32 x 6¼ in. ₱ 1000 ... $10.00
Galv. Steel 5-32 x 8½ in. ₱ 1000 ... $11.00
Galv. Steel 5-32 x 11½ in. ₱ 1000 ... $12.00
Galv. Steel 5-32 x 15½ in. ₱ 1000 ... $14.00

Tinners' Shears, &c.—
See *Shears, Tinners', &c.*

Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—
See *Cutters, Tobacco.*

Tools—
Coopers'—
L. & I. J. White ... 20@20&5%

Saw—
Atkins' Cross Cut Saw Tools ... 40%
Simonds' Improved ... 33⅓%
Simonds' Crescent ... 25%

Ship—
L. & I. J. White ... 25%

Transom Lifters—
See *Lifters, Transom.*

Traps—Fly—
Balloon, Globe or Acme ... doz. $1.15@1.25; gro. $11.50@12.00
Harper, Champion or Paragon ... doz. $1.25@1.40; gro. $13.00@13 50

Game—
Oneida Pattern ... 75¢10¢5&30¢5%
Newhouse ... 45&45&5%
Hawley & Norton ... 65&5&65&10%
Victor (Oneida Pattern) ... 75@75&5%
Star (Blake Pattern) ... 60&5&60&10%

Mouse and Rat—
Mouse, Wood, Choker, doz. holes ... 8½@9c
Mouse, Round or Square Wire ... doz. $0.85@1.00
American Pattern French Rat and Mouse Traps—
No. 1, Detroit Marty Pattern, ₱ doz. $4.50; in ½ gro. lots, ₱ doz. ... $4.00
No. 2, Detroit Marty Pattern, ₱ doz. $3.25; in ½ gro. lots, ₱ doz. ... $3.00
Detroit Marty Pattern Mouse, ₱ doz. $2.00; in ½ gro. lots, ₱ doz. ... $1.75
Diamond Joe Mouse Traps ... per doz. 60c
Diamond Joe Rat Traps ... per doz. $1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, Each $1.12½; ₱ doz. $12.00
No. 3, Rat, ₱ doz. $6.00; case of 50 $5.25 doz.
No. 3½, Rat, ₱ doz. $4.75; case of 72 $4.25 doz.
No. 4, Mouse, ₱ doz. $3.50; case of 72 $2.75 doz.
No. 5, Mouse, ₱ doz. $2.75; case of 150 $2.25
Schuyler's Rat Killer, No. 1, ₱ gr. $30.00; No. 2, ₱ gr. $20.00; Mouse, No. 3, $18.00 ... 50%

Target—
Markle's, each ... $5.50

Trimmers, Spoke—
Bonney's Nos. 1 and 2 ... 40%

Trowels—
Disston Brick and Pointing ... 30%
Disston Plastering ... 25%
Disston "Standard Brand" and Garden Trowels ... 40%
Never-Break Steel Garden Trowels, gro. $7.00
Peace's Plastering ... 30%
Rose Brick and Plastering ... 25&5%
Woodrough & McParlin, Pl'st'ring ... 25%

Trucks, Warehouse, &c.—
B. & L. Block Co.:
New York Pattern ... 50&10%
Western Pattern ... 60&10%
Handy Trucks ... per doz. $16.00
Daisy Stove Trucks, Improved pattern ₱ doz. $18.50
Model Stove Trucks ... ₱ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	$5.00	5 50	6.00
Galvanized Wash Tubs (S. S. & Co.):			
No.	1	2	3	10	20	30
Per doz.	$5 25	6.00	6.75	6.50	7 25	8.00

Twine—
Miscellaneous—

Flax Twine—	BC	B.
No. 9, ¼ and ½-lb. Balls	21½c	23½c
No. 12, ¼ and ½ lb. Balls	17½c	19½c
No. 18, ¼ and ½-lb. Balls	15½c	17½c
No. 24, ¼ and ½-lb. Balls	15 c	17 c
No. 36, ¼ and ½-lb. Balls	14½c	16½c

Chalk Line, Cotton, ½-lb Balls ... 22@22½c
Cotton Mops, 6, 9, 12 and 15 lb. to doz ... 7@8c
Cotton Wrapping 5 Balls to lb ... according to quality ... 11c@17c
American 2-Ply Hemp, ¼ and ½-lb. Balls ... 13@14c
American 3 Ply Hemp, 1-lb. Balls ... 13@14c
India 2-Ply Hemp, ¼ and ½-lb Balls (Spring Twine) ... 7c
India 3-Ply Hemp, 1-lb. Balls ... 7 c
India 3-Ply Hemp, 1½-lb. Balls ... 6½c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls ... 8@9c
Mason Line, Linen, ½-lb. Balls ... 45c
No. 2½ Mattress, ¼ and ½-lb. Balls 37c
Wool, 3 to 6 ply ... 5c

Vises—
Solid Box ... 50@50&10%

Parallel—
Athol Machine Co.:
Simpson's Adjustable ... 40%
Standard ... 40%
Amateur ... 25%
Bonney's ... 40%
Columbian Hdw Co ... 40%
Fisher & Norris Double Screw ... 15&10%
Hollands':
Machinists' ... 40%
Key tone ... 65&5%
Lewis Tool Co ... 20@30%
Massey's Perfect ... 15@20%
Massey's:
Clincher ... 30@40%
Combination, Quick Adj ... 40%
Woodworker's ... 15%
Merrill's ... 20%
Miller's Falls ... 50&10&10%
Parker's:
Victor ... 20@25%
Regulars ... 20@25%
Vulcan's ... 40@45%
Combination Pipe ... 55@60%
Prentiss ... 20@25%
Sargent's ... 40%
Snedliker's X. L. ... 20@25%
Stephens' ... 20@25%

Saw Filers—
Bonney's, No. 1, $13; No. 3, $16 ... 50%
Disston's D 3 Clamp and Guide, ₱ doz $30 ... 25%
Reading ... 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ... 45&50%

Miscellaneous—
Bignall & Keeler Combination Pipe Vise ... 60%
Parker's Combination Pipe:
87 Series ... 60%
187 Series ... 60&5%
No. 870 ... 40%

Wads—Price Per M.

B. E., 11 up	60c
B. E., 9 and 10	70c
B. E., 8	80c
B. E., 7	90c
P. E., 11 up	$1.00
P. E., 9 and 10	1.25
P. E., 8	1.50
P. E., 7	1.50
Ely's B E., 11 and larger	$1.70@1.75
Ely's P. E., 12 to 20	$3.00@3.25

Dis. 10%

Wagon Jacks—
See *Jacks, Wagon.*

Ware, Hollow—
Aluminum—
S. S. & Co. Reduced List ... 40%

Cast Iron, Hollow—
Stove Hollow Ware:
Ground ... 65%
Unground ... 70%
White Enameled Ware:
Maslin Kettles ... 70¢10@75%
Covered Ware:
Tinned and Turned ... 40¢10@40&10¢5%
Enameled and Plain ... 50@50¢10¢ 5%
See also *Pots, Glue.*

Enameled—
Agate Nickel Steel Ware, list Nov. 1, '01 ... 50&10%
Iron Clad Ware ... 70&10%
Never Break Enameled ... 50&5&50&10%

Tea Kettles—

Galvanized Tea Kettles:				
Inch	6	7	8	9
Each	45c	50c	55c	65c

Steel Hollow Ware.
Avery Spiders & Griddles ... 65&65&5%
Avery Kettles ... 60%
Porcelained ... 50&5&50&10%
Never Break Spiders and Griddles ... 65&5%
Never Break Kettles ... 60%
Solid Steel Spiders & Griddles ... 65&5%
Solid Steel Kettles ... 60%
Solid Steel Ware, Enameled ... 50&5%

Washboards—
Solid Zinc: ₱ doz
Crescent, family size, bent frame ... $3.00
Red Star, family size, stationary protector ... $3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector ... $2.65
Cable Cross, family size, stationary protector ... $2.90
Single Zinc Surface:
Naiad, family size, open back perforated ... $2.40
Saginaw lobe, protector, family size, ventilated back ... $2.25

Brass Surface:
Brass King, Single Surface, open back $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00

Washers—
Leather, Axle—
Solid.....85&10&10@85&10&10&10%
Patent.....85&10@85&10&20%
Coil: ⅜ 1 1¼ 1¾ *Inch.*
10c 11c 12c 13c per 100
Iron or Steel—
Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers....$5.50 4.60 3.30 3.10 2.90
In lots less than one keg add ½c per lb., 5-lb. boxes add ½c to list.
Cast Washers—
Over ½ inch, barrel lots, per lb......
1½@1¾c

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Wedges—
Oil Finish.....*lb. 2.90@3.10c*

Weights, Sash—
Per ton, f.o.b. factory:
Eastern District.....$20.00@21.00
Western, Central and Southern Districts.....$22.50@23.00

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in., $1.15@1.65; 10-in., $1.75@2.00; 12-in., $2.35@2.50; 14-in., $3.50@3.75

Wire and Wire Goods—
Bright and Annealed:
6 to 9.....72½&5@72½&10%
10 to 18.....72½&10@72½&10&5%
19 to 26.....75&10&2½@75&10&2½%
27 to 36.....75&10&7½@75&10&2½%
Galvanized:
6 to 18.....70@70&5%
19 to 26.....72½&5@72½&10%
27 to 36.....72½&10@72½&10&5%
Coppered:
6 to 9.....70&5@70&10%
10 to 18.....70&10@70&5&5%
19 to 26.....75&7½@75&10&2½%
27 to 36.....75&10@75&10&5%
Tinned:
6 to 14.....75@75&7½%
15 to 18.....72½&5@72½&7½%
19 to 26.....70&5@70&5&5%
27 to 36.....70@70&5%
Annealed Wire on Spools..70&5@70&10%
Brass and Copper Wire on Spools, 60&5@60&10%
Brass, list Feb. 26, '96.....25%
Copper, list Feb. 26, '96.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
List April 1, 1901.....85&10%

Wire Cloth and Netting—
Galvanized Wire Netting..80&20&5%
Painted Screen Cloth per 100 ft., $1.10
Light Hardware Grade:
2-18 Mesh, Plain (8c. list) sq. ft...
1¼@1¾c
2-18 Mesh, Galv. (8c. list) sq. ft 2¼@2¾c

Wire, Barb—See *Trade Report.*
Wire Rope—See *Rope, Wire.*
Wrenches—
Agricultural.....70&10@75&5%
Case lots.....75&10%
Acme.....60&10%
Alligator.....70%
Baxter's S.....60&10%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&5%
Combination Bright.....40%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....55%
Bindley Automatic.....30%
Boar Iman's.....33½%
Coes' Genuine.....40&10&5%
Coes' "Mechanics'".....40&10&10&5&5%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Elgin Wrenches.....40%
Elgin Monkey Wrench Pipe Jaws...33⅓%
Gem Pocket.....30%
Hercules.....70%
Knife Handle, Machinists' (W. & B.):
Case lots.....50&10%
Less than case lots.....50&5%
Improved Pipe (W. & B.).....60%
Solid Handles, P.S. & W.....50@50&10%
Stillson.....65%
Triumph.....60&10%
Vulcan Chain.....50%

Wrought Goods—
Staples, Hooks, &c., list March 17 '02.....50@50&10%

Yokes, Neck—
Covert Saddlery Works, Trimmed.60&5%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.. list net

Zinc—
Sheet.....*lb 6¼c@6½c*

PAINTS, OILS AND COLORS—Wholesale Prices.

White Lead, Zinc, &c.
Lead, English white, in Oil.... 7½@ 9⅜
Lead, American White, in Oil:
Lots of 500 ℔ or over .... @ 6
Lots less than 500 ℔ .... @ 6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... .. @ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. .. @ 1½
Lead White, Dry in bbls..... 5½@ 6
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry..... ℔ ℔ 4½@ 4⅞
Zinc, Paris, Red Seal, dry..... .. @ 8⅝
Zinc, Paris, Green Sea. dry..... .. @ 9⅞
Zinc, Antwerp Red Seal, dry... .. @ 6½
Zinc, Antwerp, Green Seal, dry .. @ 8
Zinc, V. M. French, in Poppy Oil, Green Seal:
Lots of 1 ton and over.....12 @12½
Lots of less than 1 ton.....12½@12¾
Zinc, V. M French, in Poppy Oil, Red Seal:
Lots of 1 ton and over.....10¾@11⅛
Lots of less than 1 ton.....11 @11½
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors.
Black, Carbon.....℔ ℔ 5 @ 8
Black, Drop, Amer..... 4 @ 7
Black, Drop, Eng..... 7 @11
Black, Ivory..... 12 @21
Lamp, Com..... 4½@ 6
Blue, Celestial..... ℔ ℔ 4 @ 6
Blue, Chinese.....30 @35
Blue, Prussian.....28 @34
Blue, Ultramarine..... 4 @20
Brown, Spanish..... ¼@ 1
Brown, Vandyke, Amer..... 1¾@ 2½
Brown, Vandyke, Foreign..... 2½@ 3½
Carmine, No. 40.....℔ ℔ $2.05@2.75
Green, Chrome, ordinary..... 5 @ 6½
Green, Chrome, pure.....19 @20
Lead, Red, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... .. @ 5½
Lots less than 500 ℔..... .. @ 6
Litharge, bbls. ½ bbls. and kegs:
Lots 500 ℔ or over..... .. @ 5½
Lots less than 500 ℔..... .. @ 6
Ocher, French Washed..... 1¾@ 1⅞
Ocher, Dutch Washed..... 4¾@ 5
Ocher, American.... ℔ ton $10.00@15.00
Orange Mineral, English.. ℔ ℔ 8½@10½
Orange Mineral, French..... 11 @
Orango Mineral, German..... 8½@10½
Orange Mineral, American .... 7½@ 8
Red, Indian, English..... 4½@ 8½
Red, Indian, American..... 3 @ 3¼
Red, Turkey, English..... 4 @ 6
Red, Tuscan, English..... 7 @10
Red, Venetian, Amer., ℔ 100 ℔. .50@1.50
Red Venetian, English, ℔ 100 ℔ 1.80@2.00
Sienna, Italian, Burnt and Powdered..... ℔ ℔ 3½@ 7½
Sienna, Ital., Raw, Powd..... 3½@ 7½
Sienna, American, Raw..... 1½@ 2
Sienna, American, Burnt and Powdered..... ℔ ℔ 1½@ 2
Talc, French..... ℔ 100 ℔ $1.25@1.50
Talc, American..... .90 @1.10
Terra Alba, French, ℔ 100 ℔ . 95 @1.00
Terra Alba, English..... .95 @1.00
Terra Alba, American No. 1.... .65 @85
Terra Alba, American No. 2.... .45 @50
Umber, Turkey, Bnt. & Pow. ℔ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer..... 1½@ 2
Umber, Raw, Amer..... 1½@ 2
Yellow, Chrome.....10½@25
Vermilion, American Lead.....10 @40
Vermilion, Quicksilver, bulk ... @70
Vermilion, Quicksilver, bags.... @71
Vermilion, English, Import... .80 @95
Vermilion, Chinese..... .$1.05@1.20

Colors in Oil.
Black, Lampblack..... 12 @14
Blue, Chinese..... 36 @40
Blue, Prussian..... 32 @36
Blue, Ultramarine..... 13 @16
Brown, Vandyke..... 9½@13
Green, Chrome.....10 @12
Green, Paris..... @24
Sienna, Raw.....10 @13
Sienna, Burnt.....10 @13
Umber, Raw..... 9½@12
Umber, Burnt..... 9½@12

Miscellaneous.
Barytes, Foreign, ℔ ton....$19.00@21.00
Barytes, Amer. floated..... 19.00@20.00
Barytes, Crude, No. 1..... 9.00@10.00
Chalk, in bulk.....℔ ton 2.50@ 2.80
Chalk, in bbls.....℔ 100 ℔ .@ .35
China Clay, English..℔ ton 12.00@17.50
Cobalt, Oxide.....℔ 100 ℔ 2.20@ 2.50
Whiting, Common. ℔ 100 ℔ .40@ .60
Whiting, Gilders..... .45½@ .65
Whiting, extra Gilders'.... .55@ .68

Putty.
In bladders.....$2.25
In bulk.....2.25
In cans, 1 ℔ to 5 ℔..... .....3.25
In cans 12 ℔ to 25 ℔..... .....2.25

Spirits Turpentine.
In Southern bbls.... .....47½@48 ¢
In machine bbls.....48 @48½¢

Glue.
Cabinet.....11½@16
Extra White.....18 @23
French.....12 @16
Irish.....13½@16
Low Grade.....℔ ℔ 9 @12
Medium White.....14½@16½

Animal, Fish and Vegetable Oils.
Linseed, City, raw.....℔ gal..66 @67
Linseed, City, boiled..... 68 @69
Linseed, State and West'n, raw.63 @65
Linseed, Raw Calcutta seed..... .. @85
Lard, Prime..... 81 @82
Lard, Extra No. 1..... 60 @65
Lard, No. 1..... 55 @60
Cotton-seed, Crude..... .. @ ..
Cotton-seed, Summer Yellow, prime..... 46 @47
Cotton-seed Summer Yellow, off grades..... 45 @45½
Sperm, Crude..... .. @ ..
Sperm, Natural Spring..... 71 @73
Sperm, Bleached Spring..... 74 @76
Sperm, Natural Winter..... 75 @77
Sperm, Bleached Winter..... 78 @80
Tallow, Prime..... 62 @64
Whale, Crude..... .. @ ..
Whale, Natural Winter..... 46 @47
Whale, Bleached Winter..... 48 @49
Menhaden, Crude, Sound..... .. @ ..
Menhaden, Light Strained..... 32 @33
Menhaden, Bleached Winter... 34 @35
Menhaden, Ex Bleached Winter 36 @37
Cocoanut, Ceylon..... .. 7¼@ 7⅝
Cocoanut, Cochin..... 8¼@ 8½
Cod, Domestic..... 33 @34
Cod, Newfoundland..... 36 @40
Red Elaine..... @42
Red Saponified.....℔ ℔ 6¾@ ..
Olive, Italian, bbls..... 55 @ 56
Neatsfoot, prime..... 58 @60
Palm, prime, Lagos.....℔ ℔ 6 @ 6¼

Mineral Oils.
Black, 30 gravity, 25@30 cold test.....℔ gal. 9¾@ 10¼
Black, 29 gravity, 15 cold test. 10½@ 11½
Black, summer..... 9½@ 9⅝
Cylinder, light filtered..... 14½@17½
Cylinder, dark filtered..... 11½@15½
Paraffine, 903-907 gravity..... 12½@12¾
Paraffine, 903 gravity.. ..... 11½@11¾
Paraffine, 883 gravity..... 9½@10
Paraffine, red, No. 1..... 12½@12¾
In small lots ¼c advance.

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

MAY 14, 1902.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report

IRON AND STEEL—

Bar Iron from Store—

Refined Iron:
1 to 1¾ in. round and square ..... ₱ lb 2.10@2.20¢
1⅛ to 4 in. x ⅜ to 1 in. ..... ₱ lb 2.20@2.30¢
1½ to 4 in. x ¼ to 5-16 ..... ₱ lb 2.20@2.30¢
Rods—⅜ and 11-16 round and square. ₱ lb 2.40@2.50¢

Angles:	Cts ₱ lb
3 in. x ¼ in. and larger	2.75@3.00¢
3 to 3½ in. x 3-16 in.	2.85@3.00¢
1½ to 3 in. x ⅛ in.	3.00¢
1½ to 2¾ in. x 3-16 in and thicker	2.70¢
1 to 1¼ in. x 3-16 in.	2.80¢
1 to 1¼ x ⅛ in.	2.80¢
⅞ x ⅛ in.	2.90¢
¾ x ⅛ in.	3.00¢
⅝ x ⅛ in.	3.70¢
½ x 3-32 in.	4.50¢

Tees:	
1 in.	3.20¢
1¼ in.	3.10¢
1½ in. and larger	3.00@3.25¢
Beams	3.00@3.25¢
Channels, 3 in. and larger	3.00@3.25¢
Bands—1½ to 6 x 3-16 to No. 8	₱ lb 2.40¢
"Burden's Best" Iron, base price	₱ lb 3.15¢
Burden's "H. B. & S. Iron, base price	₱ lb 2.95¢
"Ulster"	₱ lb 3.60¢
Norway Bars	3.75@4.25¢
Norway Shapes	4.00@4.50¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	2.10 to 2.20¢
Toe Calk, Tire and Sleigh Shoe	2.30@3.00¢
Best Cast Steel, base price in small lots	7½¢

Soft Steel Sheets—

¼ inch	2.20¢	No. 14	3.00¢
3-16 inch	2.30¢	No. 16	3.10¢
No. 8	2.40¢	No. 18	3.50¢
No. 10	2.70¢	No. 20	3.50¢
No. 12	2.90¢	No. 22	3.60¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel	R. G. Cleaned.
Nos. 14 to 16	₱ lb, 3.45	3.50¢
Nos. 18 to 21	₱ lb, 3.55	3.60¢
Nos. 22 to 24	₱ lb, 3.60	3.70¢
Nos. 25 and 26	₱ lb, 3.70	3.80¢
No. 27	₱ lb, 3.80	3.90¢
No. 28	₱ lb, 3.90	4.00¢

Russia, Planished, &c.

Genuine Russia, according to assortment ..... ₱ lb 11@14¢
Patent Planished ..... ₱ lb A, 11¢; B, 10¢, net

Galvanized.

Nos. 14 to 16	₱ lb, 3.45@3.60¢
Nos. 18 to 20	₱ lb, 3.70@3.90¢
Nos. 22 to 24	₱ lb, 4.00@4.20¢
No. 26	₱ lb, 4.25@4.50¢
No. 27	₱ lb, 4.55@4.80¢
No. 28	₱ lb, 4.85@5.10¢
No 30	₱ lb, 6.00@6.30¢

No. 20 and lighter, 36 inches wide, 25¢ higher.

Foreign Steel from Store—

Best Cast	₱ lb 15 ¢
Extra Cast	₱ lb 18 @ 20 ¢
Swaged, Cast	₱ lb 16 ¢
Best Double Shear	₱ lb 15 ¢
Blister, 1st quality	₱ lb 13 ¢
German Steel, Best	₱ lb 10 ¢
2d quality	₱ lb 9 ¢
3d quality	₱ lb 8 ¢
Sheet Cast Steel, 1st quality	₱ lb 15 ¢
2d quality	₱ lb 14 ¢
3d quality	₱ lb 12 ¢
R. Musnet's "Special"	₱ lb 16 ¢
" " Annealed	₱ lb 75 ¢
" " "Titanic"	₱ lb 19 ¢
Hobson's Choice XX Extra Best	₱ lb 35 ¢
Jessop Self Hardening	₱ lb 45 ¢
Seamans' "Nelson" Steel	40 ¢
Hobson's "Soho" Special Self-Hardening	₱ lb 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per lb
Banca, Pigs	30¼@30⅝¢
Straits, Pigs	30¼@30⅝¢
Straits in Bars	31¼@31½¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	$7.25
IX, 14 x 20	8.75
Melyn Grade:	
IC, 14 x 20	6.75
IX, 14 x 20	8.25
Allaway Grade:	
IC, 14 x 20	6.25
IX, 14 x 20	7.35

American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 lb	$4.90@5.00
IX, 14 x 20	$6.00@.....

American Terne Plates—

IC, 20 x 28	$10.00
IX, 20 x 28	$12.00

Tin Boiler Plates, American—

XX, 14 x 20 ..... 112 sheets	$12.50
XX, 14 x 28 ..... 112 sheets	13.50
XX, 14 x 31 ..... 112 sheets	15.00

Copper—

DUTY: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₱ lb.

Ingot—

Lake	13 @13¼¢
Casting	12¾@13 ¢

Sheet and Bolt—

February 2, 1902. Net.

Prices, in cents per pound. Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 9 lb. sheet, 36 in. and heavier.	32 oz. to 64 oz. 25 to 50 lb.	24 oz. to 32 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9½ to 11 lb.	10 oz. and 11 oz. 7¾ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	18	18	18	18	19	20	21	24	27
30	96	72	18	18	18	18	19	21	24	27	
30	.....	96	18	18	18	18	20	24	27		
36	72	.....	18	18	18	18	20	22	25	28	
36	96	72	18	18	18	18	20	24	27		
36	120	96	18	18	18	19	21				
36	.....	120	18	18	19	20					
48	72	.....	18	18	19	20	22	25	28		
48	96	72	18	18	19	21	23	26			
48	120	96	18	18	20	22	26				
48	.....	120	18	19	21	24					
60	72	.....	18	18	19	21	24	29			
60	96	72	18	18	20	22	27				
60	120	96	18	19	21	24					
60	.....	12	19	20	22	26					
72	96	.....	18	19	21	26					
72	120	96	18	20	23	28					
72	.....	120	19	21	26						
108	96	.....	19	21	24						
108	120	96	20	22	25						
108	.....	120	21	23	27						
wider	132	.....	22	24							
than 108	.....	132	24	23							

Rolled Round Copper, ¾ inch diameter and over, ₱ lb 18¢.
Circles, Segments and Pattern Sheets, 3¢ ₱ lb advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₱ square foot and heavier, 1¢ ₱ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₱ square foot, 2¢ ₱ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₱ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₱ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₱ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₱ lb	2 ¢
12 oz. and up to 14 oz. to square foot, ₱ lb	2½¢
10 oz. and up to 12 oz., ₱ lb	3¢
Lighter than 10 oz., ₱ lb	3½¢

Circles less than 8 in. diameter, 2¢ ₱ lb additional.
Circles over 13 in. diameter are not classed as Copper Bottoms.
Polished Copper Bottoms and Flats, 1¢ ₱ lb extra.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.
List Feb. 20, 1901.

Nos.	0000 to 8	9 and 10	11 and 12
	Base	½¢	¾¢ ₱ lb adv.
Nos.	13	14	15	16
	½¢	¾¢	1¢	1¼¢ ₱ lb adv.
Nos.	17	18	19	20
	1¼¢	2¢	2½¢	2¾¢ ₱ lb adv

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3-9	..	.....	...	.....	33	31	30	29	28	27	25	24
12	10	..	.....	...	37	35	33	31	30	29	28	27	25	24
13	11	..	.....	...	37	35	33	31	30	29	28	27	25	24
14	12	..	.....	41	37	35	33	31	30	29	28	27	25	24
15	13	..	.....	42	38	36	33	32	31	30	29	28	26	25
16	14	..	.....	43	39	37	34	33	32	31	30	29	26	25
17	15	..	.....	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	32	31	30	29	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29	28
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31	30
21	20	66	51	46	43	41	40	39	38	37	36	35	34	32
22	21	71	56	49	44	42	41	40	39	38	37	37	36	34
23	22	76	61	56	46	44	43	42	41	40	39	39	39	37
24	23	81	66	53	48	46	45	44	43	41	40	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45	

Copper Bronze and Gilding Tube, 3¢ ₱ lb additional.

Iron Pipe Sizes—Brass

⅛ ¼ ⅜ ½ ¾ 1 1¼ 1½ 2 2½ 3 3½ 4 4½ 5 6 inch
36 32 29 27 21 21 21 21 21 21 21 23 21 25 27 28¢₱lb
Copper, Bronze or Gilding Tubes, 3¢ ₱ lb additional.

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Jan. 6, 1899.
Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ¾ in. up to 2 in.	$0.35
" " " ⅞ "	.36
" " " 1 "	.38
" " " 1⅛ "	.41
" " 5-16 " 1¼ "	.48
" " ¼ " 5-16"	.65
" " 3-16 " ¼ "	1.00
" " ⅛ " 3-16"	1.50
Smaller than ⅛ inch	Special
2 inch to 3 inch, to No. 19, inclusive	.35
3 inch	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list 40%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 2 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20 inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.33	.39

Common High Brass Wider than and including	in. 2 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.
Add ½¢ ₱ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List 30%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gilding bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 35%; Copper Wire, Nom. List November 16, 98.
Spring Wire, 2¢ ₱ lb advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅝ to 3 in. diameter, ₱ lb, net ..... 17¢
Finished Piston Rods, ⅝ to 2½ in. diameter, ₱ lb net, 18¢
Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₱ lb

Western Spelter	4.65@4.75¢

Zinc.

Duty: Sheet, 2¢ ₱ lb.

600 lb casks	6¾¢	Per lb	7@7¼¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₱ lb. Pipe and Sheets, 2½¢ ₱ lb.

American Pig	4.45@4½¢
Bar	5 @5¼¢
Pipe	6½¢ ..... 20% off
Tin Lined Pipe	12½¢ ..... 20% off
Block Tin Pipe	37½¢ ..... 20% off
Sheet Lead	7¼¢ ..... 20% off

Old Lead in exchange, 3¼¢ ₱ lb.

Solder.

½ & ¼, guaranteed ..... 19 @19½¢
No. 1 ..... 16½@18 ¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₱ lb.

Cookson	₱ lb 10½@10¾¢
Hallett's	₱ lb 8¼@8¾¢
U. S.	₱ lb 8¼@8¾¢

Aluminum—

Duty: Crude, 8¢ ₱ lb. Plates, Sheets, Bars and Rods, 13¢ ₱ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:	
Small lots	₱ lb 37¢
100-lb lots	₱ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:	
Small lots	₱ lb 34¢
100-lb lots	₱ lb 33¢

Aluminum Sheet, B. & S. gauge, 50 lb or more

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₱ lb.	₱ lb.	₱ lb
Nos. 13 to 19	$0.42	$0.44	$0.47
No. 20	.44	.46	.49
Nos. 21 to 23	.46	.48	.51
No. 24	.46	.50	.53
No. 25	.47	.51	.54
No. 26	.47	.54	.59
No. 27	.48	.57	.62
No. 28	.48	.57	.64
No. 29	.49	.60	.69
No. 30	.50	.64	.77

Note.—Lots of less than 50 lb 5¢ ₱ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₱ lb 40¢	No. 15	₱ lb 43¢
No. 9 to No. 10	₱ lb 40½¢	No. 17	₱ lb 50¢
No. 11	₱ lb 41 ¢	No. 18	₱ lb 55¢
No 12	₱ lb 41½¢	No. 19	₱ lb 60¢
No. 13	₱ lb 42 ¢	No. 20	₱ lb 65¢
No 14	₱ lb 42½¢	No. 21	₱ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₱ lb	9¾¢
Light and Tinned Copper	₱ lb	8¾¢
Heavy Brass	₱ lb	8 ¢
Light Brass	₱ lb	6¼¢
Lead	₱ lb	3½¢
Tea Lead	₱ lb	3½¢
Zinc	₱ lb	2½¢
No. 1 Pewter	₱ lb	16 ¢
No. 2 Pewter	₱ lb	8½¢
Pure Aluminum, Sheet	₱ lb	25¢
Cast Aluminum	₱ lb	20¢
Tin Plate scrap	₱ ton	$5.00
Wrought Scrap Iron	₱ gross ton	$13.00@13.50
Heavy Cast Scrap	₱ gross ton	$12.00@12.50
Stove Plate Scrap	₱ gross ton	$ 8.50@ 9.00
Burnt Iron	₱ gross ton	$ 7.00@ 7.25